The Business Magazine for Makers & Users of Chemicals

Management, Research, Production, Marketing

CHEMICAL INDUSTRIES

Contents

Volume 47 Number 3

Consulting Editors

Robert T. Baldwin
L. W. Bass
Frederick M. Becket
Benjamin T. Brooks
J. V. N. Dorr
Charles R. Downs
William M. Grosvenor
Walter S. Landis
Milton C. Whitaker

SEPTEMBER, 1940

Editorial

The One Hundredth A. C. S. Meeting 247

Feature Articles

Rowland Hazard—Father of the American Alkali Industry
By Williams Haynes 248

Carnauba Wax—From Plantation to Industry—Part I
By Dan F. Sweet 254

Pulse of Opinion—Outlook in Strategic Materials 259

Chemical Processing in the Production of Furs
By Dr. Charles F. Mason 260

Washington By Russell Kent 264

Plant Operation and Management

Fire Prevention in Chemical Plants By G. A. Shattuck 274
New Processes and Products 276
Packaging and Container Forum By R. W. Lahey 277
New Equipment 278

New Chemicals for Industry

Sodium Chlorite By G. P. Vincent 280
Booklets and Catalogs 282

Chemical Specialties

Aerosol Wetting Agents—Their Properties and Their Uses
By C. A. Sluhan 284

Chemical Specialty Company News 288

News of the Month in Review

General News 297
Chemical News in Pictures 265, 289
Chemical Markets 299
Foreign Literature Digest By T. E. R. Singer 304
Prices Current 306
Industry's Bookshelf 322

Part 2: Statistical and Technical Data Section

Current Statistics—Business Trends 329
Chemical Stocks and Bonds—Chemical Finance 331
Trademarks 333
U. S. Patents, Foreign Patents 335

(Index to Advertisements . . . Page 326)

Published monthly, except twice in October, and entered as 2nd class matter Dec. 22, 1934, at the Post Office at New Haven, Conn., under the Act of March 3, 1879. Subscription, Domestic, $3 a year; Canadian and foreign, $4. Single copies, 35 cents. Copyrighted, 1939, by Trade and Technical Papers, Inc., 522 Fifth Avenue, New York, N. Y., Murray Hill 2-7888; Chicago: 919 North Michigan Avenue, Whitehall 5842 — Ned Bailey. London: 2 Cockspur Street, S. W. 1, Whitehall 6642 — Donald Hunter.

Publication Staff

Walter J. Murphy
Editor

Charles J. Cunneen
J. M. Crowe
Assistant Editors

William F. George
Advertising Manager

L. Chas. Todaro
Circulation Manager

John H. Burt
Production Manager

The Business Magazine for Makers & Users of Chemicals

Management, Research, Production, Marketing

CHEMICAL INDUSTRIES

Contents

Volume 47 Number 3

Consulting Editors

Robert T. Baldwin
L. W. Bass
Frederick M. Becket
Benjamin T. Brooks
J. V. N. Dorr
Charles R. Downs
William M. Grosvenor
Walter S. Landis
Milton C. Whitaker

SEPTEMBER, 1940

Editorial

The One Hundredth A. C. S. Meeting 247

Feature Articles

Rowland Hazard—Father of the American Alkali Industry
By Williams Haynes 248

Carnauba Wax—From Plantation to Industry—Part I
By Dan F. Sweet 254

Pulse of Opinion—Outlook in Strategic Materials 259

Chemical Processing in the Production of Furs
By Dr. Charles F. Mason 260

Washington By Russell Kent 264

Plant Operation and Management

Fire Prevention in Chemical Plants By G. A. Shattuck 274
New Processes and Products 276
Packaging and Container Forum By R. W. Lahey 277
New Equipment 278

New Chemicals for Industry

Sodium Chlorite By G. P. Vincent 280
Booklets and Catalogs 282

Chemical Specialties

Aerosol Wetting Agents—Their Properties and Their Uses
By C. A. Sluhan 284

Chemical Specialty Company News 288

News of the Month in Review

General News 297
Chemical News in Pictures 265, 289
Chemical Markets 299
Foreign Literature Digest By T. E. R. Singer 304
Prices Current 306
Industry's Bookshelf 322

Part 2: Statistical and Technical Data Section

Current Statistics—Business Trends 329
Chemical Stocks and Bonds—Chemical Finance 331
Trademarks 333
U. S. Patents, Foreign Patents 335

(Index to Advertisements . . . Page 326)

Published monthly, except twice in October, and entered as 2nd class matter Dec. 22, 1934, at the Post Office at New Haven, Conn., under the Act of March 3, 1879. Subscription, Domestic, $3 a year; Canadian and foreign, $4. Single copies, 35 cents. Copyrighted, 1939, by Trade and Technical Papers, Inc., 522 Fifth Avenue, New York, N. Y., Murray Hill 2-7888; Chicago: 919 North Michigan Avenue, Whitehall 5842 — Ned Bailey. London: 2 Cockspur Street, S. W. 1, Whitehall 6642 — Donald Hunter.

Publication Staff

Walter J. Murphy
Editor

Charles J. Cunneen
J. M. Crowe
Assistant Editors

William F. George
Advertising Manager

L. Chas. Todaro
Circulation Manager

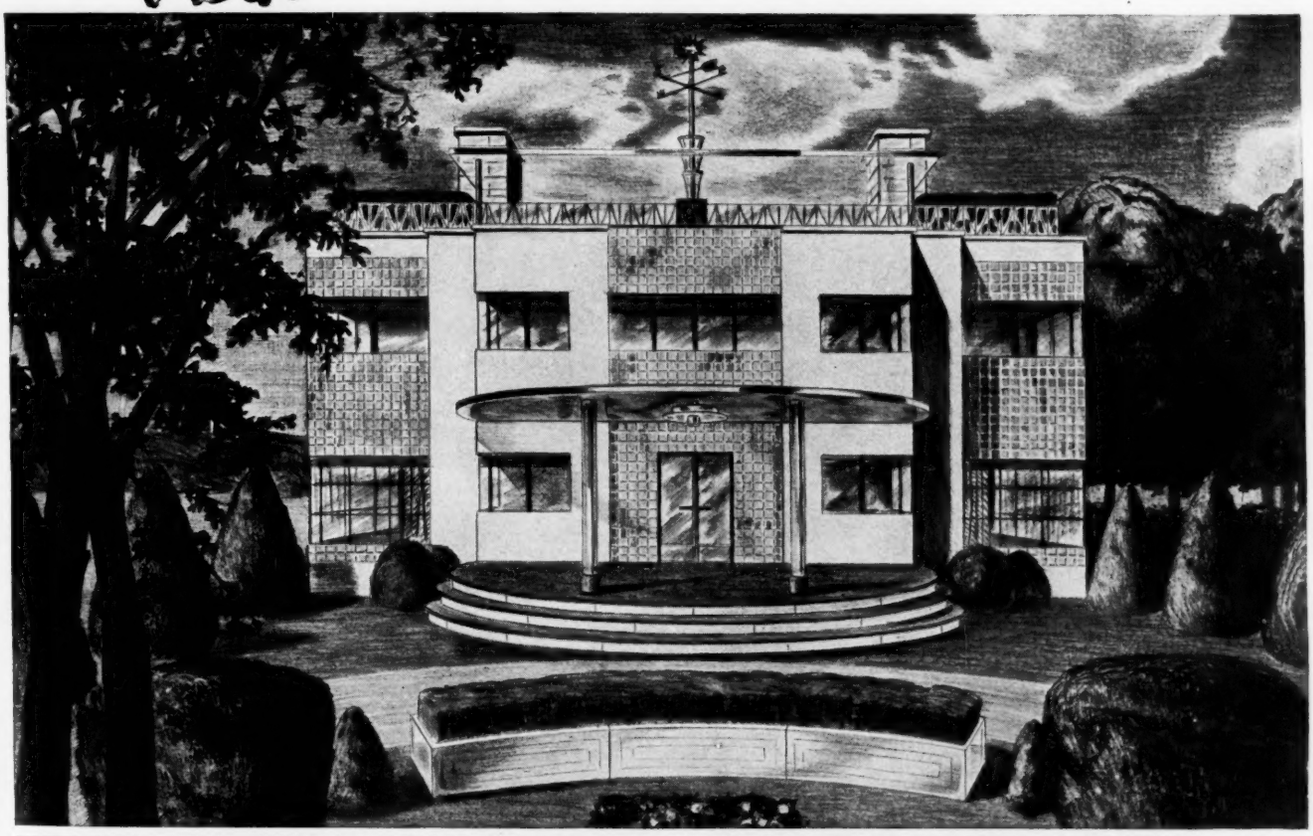
John H. Burt
Production Manager

"WHAT! GLASS HOUSES?"

Suppose some one who lived forty or fifty years ago—say one of the founders of Mathieson—could pay us a visit today. And suppose we could have the pleasure of showing him the sights of 1940, of explaining the vast changes that have taken place since the turn of the century. What do you think would amaze the old gentleman most? If he were one of the pioneers who founded Mathieson, we believe he would be most interested in the revolutionary changes wrought by chemical progress and in the part his successors have played in building the present-day America. We would go about telling him the story as we tell it in this series of advertisements.

● **Yes, Mr. M., nowadays we have houses in which glass plays a large part both in construction and decoration. Glass brick represents only one of the new ways in which the modern world utilizes glass. We use glass insulation in our homes, too. Modern decorators are producing beautiful interiors through the use of glass in decoration. Safety glass is a modern idea; our automobiles ("horseless carriages" to you, old friend) are now equipped with this cleverly constructed, shatterproof glass. The manufacture of plate glass, the last word in modernity in your day, has undergone great changes, together with window glass and glass containers of every description. And last but not least, beautiful fabrics made from spun glass are now available for a variety of purposes.**

Your successors at Mathieson are proud of their part in the growth of the great modern glass industry. They have continued to pioneer, seeking improvements in the production and distribution of Mathieson Chemicals — products whose purity and uniformity are so highly valued by leading glassmakers and other important consumers of industrial chemicals.



MATHIESON CHEMICALS

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH PRODUCTS . . . AMMONIA, ANHYDROUS and AQUA . . . FUSED ALKALI PRODUCTS . . . SYNTHETIC SALT CAKE . . . DRY ICE . . . CARBONIC GAS . . . ANALYTICAL SODIUM CHLORITE

THE MATHIESON ALKALI WORKS (INC.)
60 E. 42ND STREET, NEW YORK, N. Y.

The Reader Writes—

Dean Whitmore Is Right

Congratulations on the spread on Brooklyn Poly. I still think you are wrong, however, in the matter of "Technicians." Regardless of the dictionary or anything else, modern usage makes a technician a partly trained girl who helps in a doctor's back office or laboratory or the equivalent thereof in some other profession.

Why don't you say "Chemists and Chemical Engineers in Training," which is really what you mean.

FRANK C. WHITMORE, *Dean*,
The Pennsylvania State College,
School of Chemistry and Physics,
State College, Pa.

Thanks From Headquarters

You have certainly done a nice thing for "Poly" and its departments of Chemistry and Chemical Engineering. My compliments to you and to your photographer on the excellence of the page make-up and upon the natural and interesting "snaps." The pictures of Olsen, Caldwell, Kirk and Whitmore are particularly fine.

JOHN R. BRIERLEY, *Alumni Secretary*,
Brooklyn Polytechnic Alumni Association,
Brooklyn, N. Y.

That "ol" Ending

In answer to your query in July, 1940, issue for views on proper nomenclature for benzol, etc., I offer the following comment:—One reason for using benzol instead of benzene is the similarity of the spoken words benzene and benzine. Of course, benzol could be spelled benzole, as it sometimes is. Perhaps this would supply your answer. However, I could find more serious objection to the present "isopropanol."

E. M. NOLL,
Noll Chemical Company,
Inglewood, Calif.

No "Summer Dullness" Was Promised

I have just returned from an enjoyable vacation and have been reading the paper for August. It was a very interesting one and I enjoyed it. I noticed two typographical errors. On page 165 in the description of Sheaffer's "Para-Lastik" you state the company is located at Madison, Wisconsin. It should be Madison, Iowa, and on page 178 Bill Weed's name is shown as William J. Wood.

I thought this paper was exceedingly interesting, especially during a Summer vacation month.

H. GORDEN MACKELCAN,
Vice-President in Charge of Sales,
Innis, Speiden & Company,
New York, N. Y.

Editorial Note: Our sincere apologies to the W. A. Sheaffer Pen Co., and to "Bill" Weed. We have received a letter from G. F. Olson, advertising manager of the Sheaffer Company calling our attention to our error.

Request for Reprints

In Part 1 of the August, 1940 issue two articles are of particular interest to us. "Industrial Research—Its Functions and Demands," by Walter J. Baeza, and "Achievements in Colors—A Collaboration by Gustavus J. Esselen, Inc., Arthur D. Little, Inc., and Skinner & Sherman, Inc." If reprints are available, we would appreciate receiving a few copies of each.

A. E. GESSLER,
Director of Research,
Interchemical Corporation,
New York, N. Y.

"Shorts" From The Editor's Mail

William Hayes of New York suggests "Have more articles on why and how particular chemical companies achieved their position." Donald S. Hirtle of Cincinnati writes "Stop razzing Roosevelt and devote the space to constructive criticism of the Administration."

H. Runkel of Chicago would like to see two or three articles a year on business administration or personnel administration in relation to chemists in the laboratory.

From G. F. A. Stutz of Palmerton, N. J.:—"Use a printing ink that has a less objectionable odor than your present one."

David J. Raden of Los Angeles, Calif., suggests "Include articles on some of the processes of our basic industries, such as the manufacture of acids, ammonia, etc."

Carl A. Henlein of Manhasset, Long Island, reports "Amplify Abstracts on New Products."

CALENDAR OF EVENTS

September

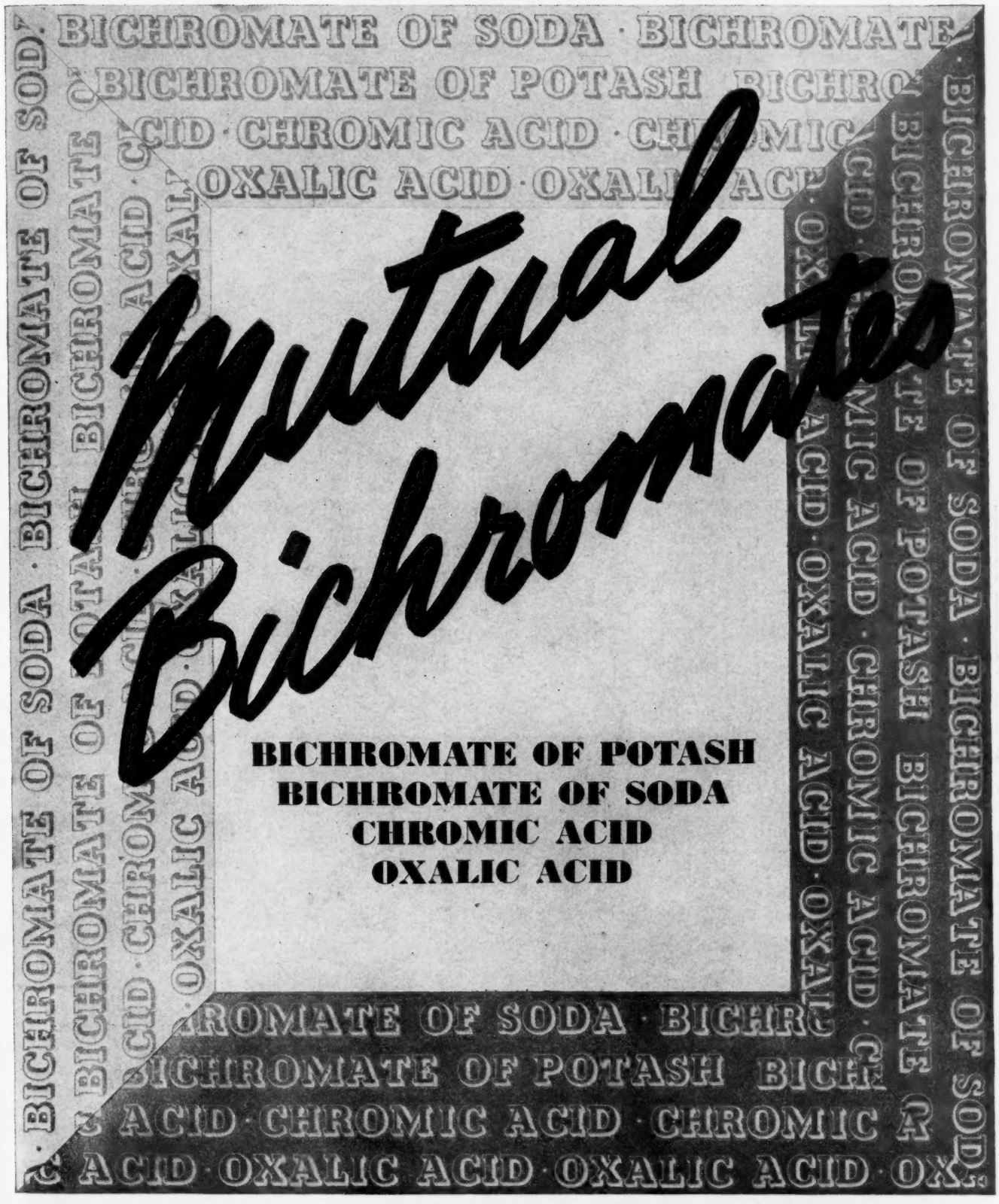
Sept. 12, Pittsburgh Paint, Varnish & Lacquer Ass'n. Regular meeting, Duquesne Club, Pittsburgh, Pa.
Sept. 16-17, National Farm Chemurgic Council, Mid-American Farm Chemurgic Conference, Cleveland, Ohio.
Sept. 16-17, Tanners' Council of America, Leather Show and Style Conference, Waldorf-Astoria Hotel, New York City.
Sept. 17, Salesmen's Association of the Amer. Chem. Ind., Final Golf Tournament and Entertainment, Pomonok Country Club, Flushing, L. I., N. Y.
Sept. 18, National Industrial Advertiser's Association, National Conference of Industrial Advertising and Marketing Executives, Detroit, Mich.
Sept. 18-20, National Petroleum Association, Hotel Traymore, Atlantic City, N. J.
Sept. 23-27, National Ass'n. of Retail Druggists, Annual Convention, Hotel Pennsylvania, New York City.
Sept. 30-Oct. 3, National Wholesale Druggists Ass'n., Annual Convention, Greenbrier Hotel, White Sulphur Springs, W. Va.

October

Oct. 2-5, Electrochemical Society, Inc., Semi-Annual Convention, Ottawa, Ont., Canada.
Oct. 3, Indianapolis Paint, Varnish & Lacquer Ass'n., Columbia Club, Indianapolis, Ind.
Oct. 4, Baltimore Paint & Varnish Production Club, Baltimore, Md.
Oct. 5-8, American Institute of Laundering, Annual Convention and Exhibit, Palmer House, Chicago, Ill.
Oct. 7, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago, Ill.
Oct. 7-11, 29th National Safety Congress and Exposition of the National Safety Council, Stevens Hotel, Chicago.
Oct. 7 (week of), American Gas Association, Annual Convention, Atlantic City, N. J.
Oct. 10, Packaging Institute, Inc., Annual Meeting, Westchester Country Club, Rye, N. Y.
Oct. 17-18, Tanners' Council of America, Annual Meeting, Palmer House, Chicago, Ill.
Oct. 17-18, American Institute of Mining & Metallurgical Engineers, Petroleum Div. Meeting, Los Angeles, Calif.
Oct. 18-19, American Ass'n. of Textile Chemists & Colorists, General Meeting, Hotel Commodore, New York City.
Oct. 18-19, Drug, Chemical and Allied Trades Section of N. Y. Board of Trade, 5th Annual Meeting and Golf Tournament, Skytop, Pa.
Oct. 21-23, American Institute of Mining & Metallurgical Engineers, Inst. of Metals, Iron and Steel Div., Cleveland, O.
Oct. 21-25, American Society for Metals, National Metal Exposition, Cleveland, O.
Oct. 24-26, American Institute of Mining and Metallurgical Engineers, Petroleum Div., Tulsa, Okla.
Oct. 27-31, National Electrical Mfrs. Ass'n., Annual Meeting, Waldorf-Astoria Hotel, New York City.
Oct. 28-30, Association of Official Agricultural Chemists, Inc., 56th Annual Meeting, Washington, D. C.
Oct. 28-30, National Pest Control Ass'n., Annual Convention, Hotel Claypool, Indianapolis, Ind.
Oct. 28-Nov. 1, Federation of Paint & Varnish Production Clubs, Annual Meeting, "Paint Show," Mayflower Hotel, Washington, D. C.
Oct. 30-Nov. 1, National Paint, Varnish and Lacquer Ass'n., Inc., 52nd Annual Meeting, Washington, D. C.

November

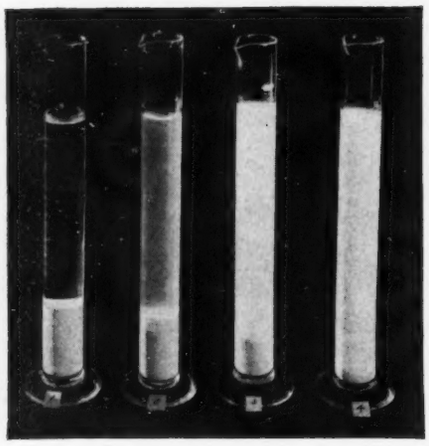
Nov. 7-9, American Institute of Mining and Metallurgical Engineers, Coal Div., Birmingham, Ala.
Nov. 7-9, The American Society of Mechanical Engineers, Joint ASME AIME Fuels Meeting, Hotel Tutwiler, Birmingham, Ala.
Nov. 11-15, American Bottlers of Carbonated Beverages, (National) A. B. C. B. Convention Exposition, Music Hall, Cincinnati, O.
Nov. 11-15, American Petroleum Institute, Twenty-first Annual Meeting, Stevens Hotel, Chicago, Ill.
Nov. 12, Oil Trades Association of New York, Inc., Annual Banquet, Waldorf-Astoria, New York City.
Nov. 11-15, American Petroleum Institute, Twenty-first Annual Meeting, Stevens Hotel, Chicago, Ill.


BICHROMATE OF SODA · BICHROMATE OF POTASH · CHROMIC ACID · OXALIC ACID
Mutual Bichromates
BICHROMATE OF POTASH
BICHROMATE OF SODA
CHROMIC ACID
OXALIC ACID

MUTUAL CHEMICAL CO. OF AMERICA

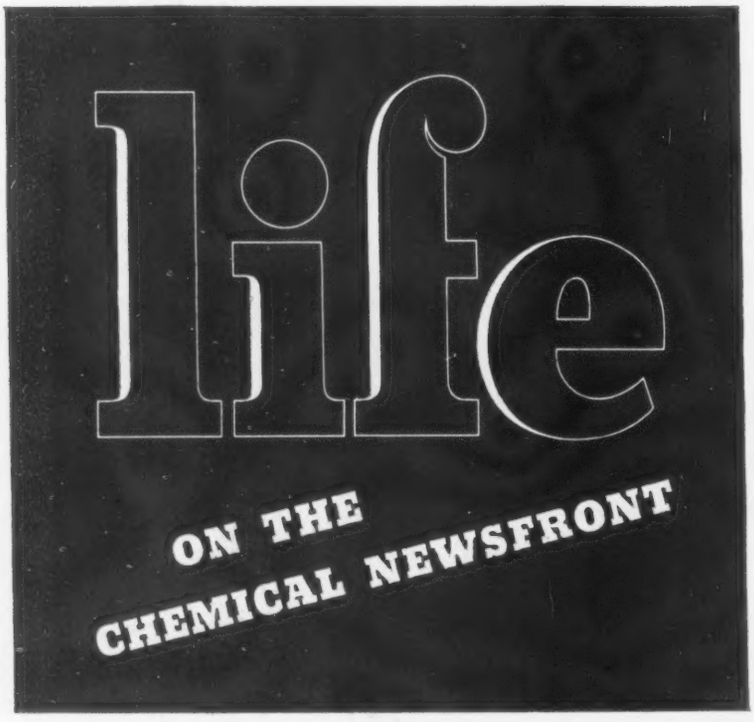
270 MADISON AVE. NEW YORK

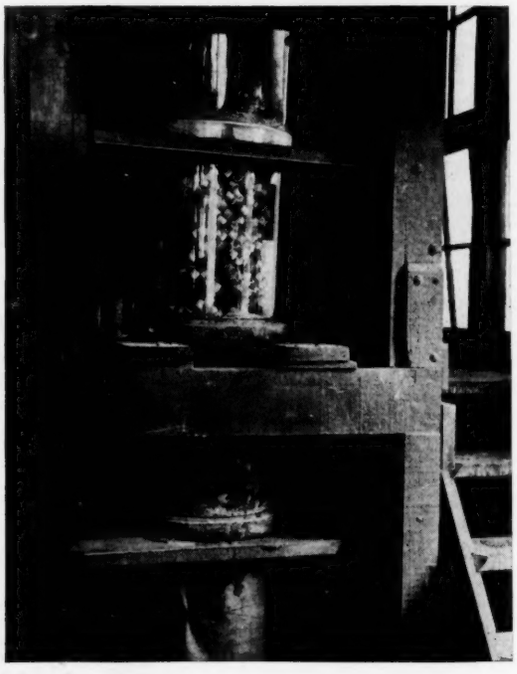
PLANTS AT BALTIMORE AND JERSEY CITY MINES IN NEW CALEDONIA



(*Above*) **SUSPENSION TESTS** show dispersing power of AERO* Brand Tetra Sodium Pyrophosphate. Graduate No. 1 contains only China clay and water. 500 ppm of soda ash were added to No. 2; 500 ppm of Tri Sodium Phosphate to No. 3; and the same amount of AERO Brand T. S. P. P. to No. 4.

(*Above*) **CHEMISTRY'S DEFENSE ROLE**—with emphasis on rubber, petroleum, food industries—is the theme of the American Chemical Society's 100th national meeting, taking place this month in Detroit, shown here.

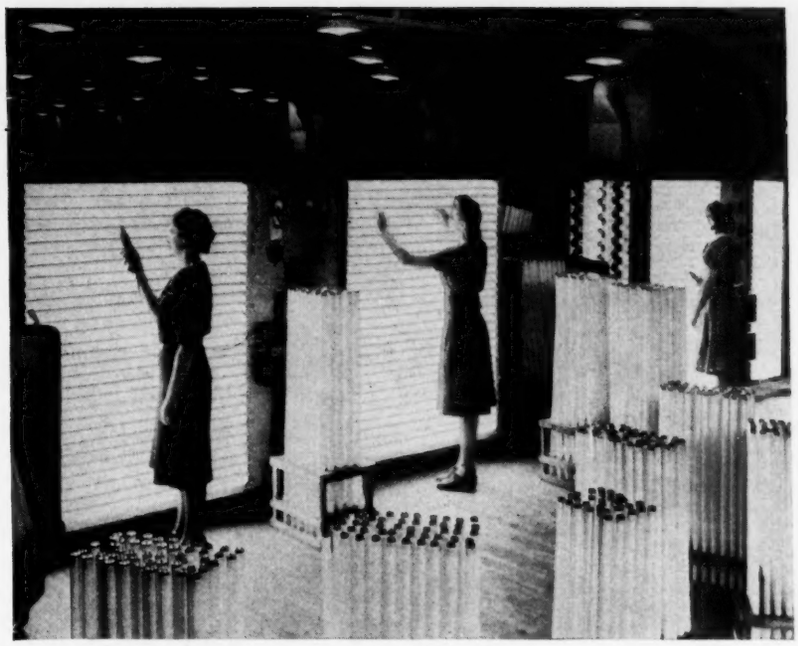


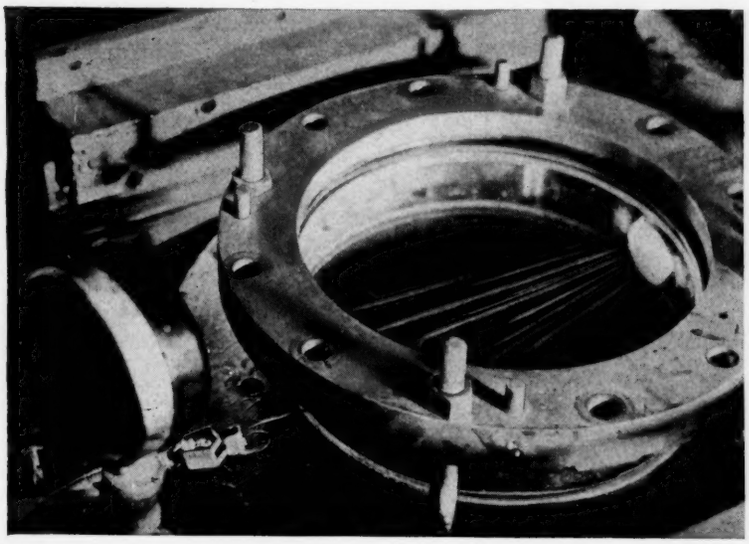


(*Above*) **PYREX GLASS** proves its value in chemical processing as well as in the kitchen. Typical application of Pyrex is the 18-inch diameter tower illustrated. Used for handling hot corrosives, they retain their original transparency after years of service.

(*Left*) **GYPSUM "SNOW"** is a novel Hollywood use for one of the oldest building materials. Cyanamid's Structural Gypsum Division produces a synthetic gypsum widely used in industrial construction for its fire safety and insulation value. Popular form is GYPSTEEL PLANK**, a prefabricated unit for fire-safe floor and roof-decks. New Bulletin describing GYPSTEEL PLANK in detail is available on request.

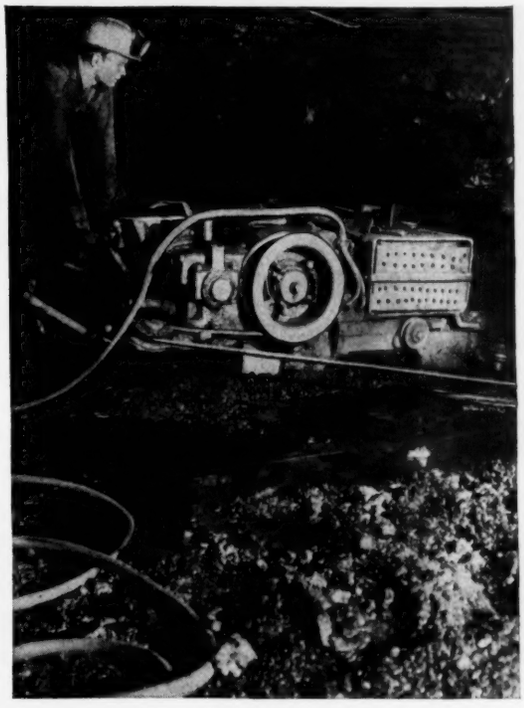
(*Above*) **SMART LEATHER GLOVES** call for extreme care in cutting and stitching—and for the finest quality of leather. Cyanamid's full line of leather chemicals and technical assistance in their use aid the tanning industry to meet the most exacting requirements.





(*Above*) **TWENTIETH-CENTURY ALCHEMISTS** continue their research into the transmutation of elements. Streaks in photo are proton tracks in the cyclotron at California Institute of Technology, where fluorine has been converted into neon and then into oxygen.

(*Above*) **COLD LIGHT** comes close to being a reality in the increasingly popular fluorescent lamps that convert more energy into light, waste less in unwanted heat. Photo shows lamps undergoing test. Beetle*** Translucent Laminated—the plastic that is already firmly established as an ideal material for reflectors in conventional lighting equipment—is finding new applications in diffusers for fluorescent lamps.

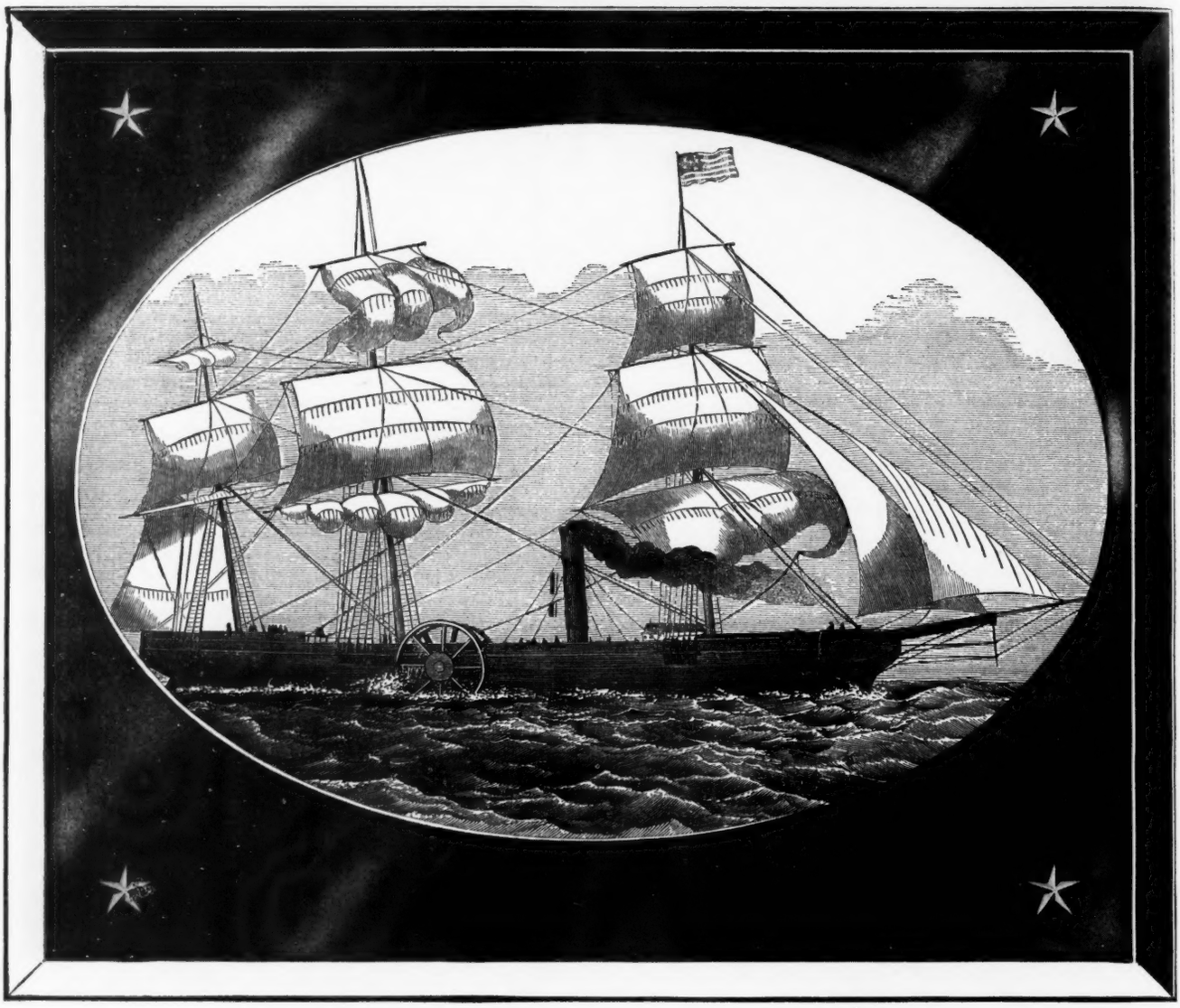


(*Above*) **MINE SAFETY** is reaching new highs with the aid of safeguards developed by chemistry. Outstanding contribution to accident prevention is the use of AEROSOL* Wetting Agents in cutting and loading operations, where this highly efficient wetting agent helps prevent formation of explosive dusts.

AMERICAN CYANAMID & CHEMICAL CORPORATION

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

*Trade-mark of American Cyanamid & Chemical Corporation applied to Wetting Agents of its own manufacture. **Trade-mark.
***Trade-mark of American Cyanamid Company applied to urea products manufactured by it.



They Started Something!

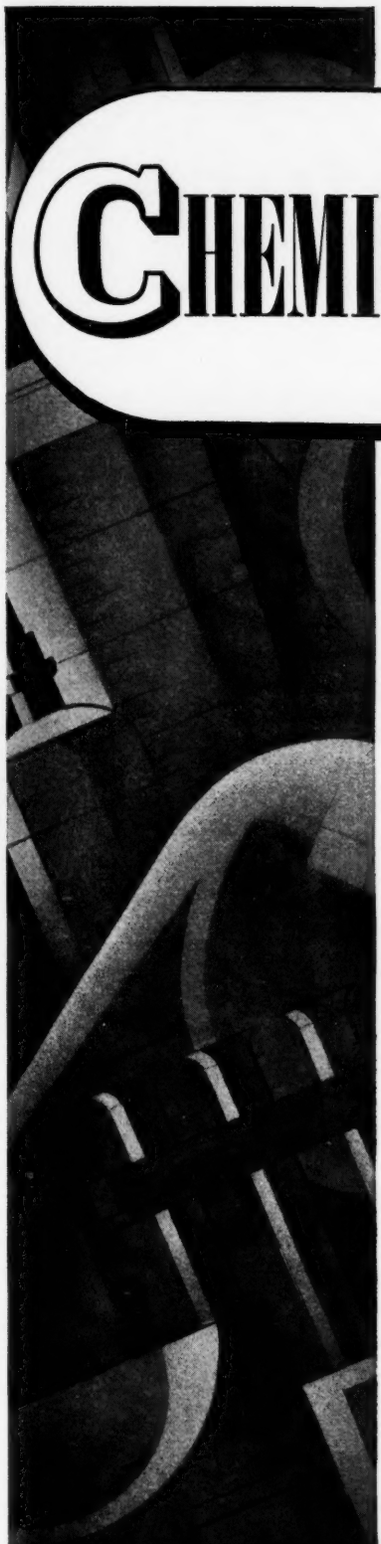
THE FIRST crossing of the Atlantic by a steamship revolutionized the future course of industry and commerce. When the Savannah completed her voyage in 1819, ocean shipping was freed from its dependence on variable winds. The steamship, only a few years earlier regarded as an impractical toy, proved its value as a new tool of commerce. With the shortening of the time needed for transatlantic crossings and the establishment of regular, dependable shipping schedules, new markets were opened for the products of agriculture and industry. And new raw materials became available to stimulate industrial growth.

Equally striking advances in industrial development have been made possible by the efforts of American scientists and engineers who have opened new domestic sources of raw materials needed by industry. When EBG engineers first made Liquid Chlorine commercially available in America, they too began a new era, not only in industry but in public health as well. Municipalities found in EBG Liquid Chlorine a new and remarkably effective means of purifying water supplies to prevent the spread of water-borne diseases. Today they are using it also in constantly increasing quantities to sterilize sewage and to reduce stream and river pollution with all its attendant evils. And in the paper and textile industries, EBG Liquid Chlorine has made possible new standards of bleaching efficiency. EBG engineers were the pioneers in the domestic production of Liquid Chlorine. You can profit by their extra years of experience in manufacturing and servicing.

The first cylinder of Liquid Chlorine made by EBG in 1909.

ELECTRO BLEACHING GAS COMPANY
Main Office: 60 East 42nd Street, New York, N.Y.
Plant: Niagara Falls, N.Y.

EBG Liquid Chlorine
FIRST IN THE COUNTRY



CHEMICALS FOR TOMORROW

DU PONT
REG. U.S. PAT. OFF.

BECAUSE Du Pont has always worked hand in hand with industry, creating new products and new markets through continuous research and engineering development, tomorrow's chemicals are yours today.

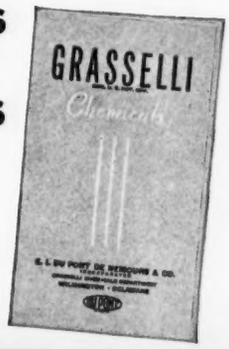
Produced to meet your own high standards, Du Pont Chemicals are quickly available through plants and warehouses located convenient to industrial areas.

Take advantage of tomorrow's chemicals today—and make your next order Du Pont.

ACIDS • • HEAVY CHEMICALS

ZINC • SPECIALTY CHEMICALS

●



Where to buy it. Write for a copy of the Grasselli Chemicals Booklet.

DU PONT

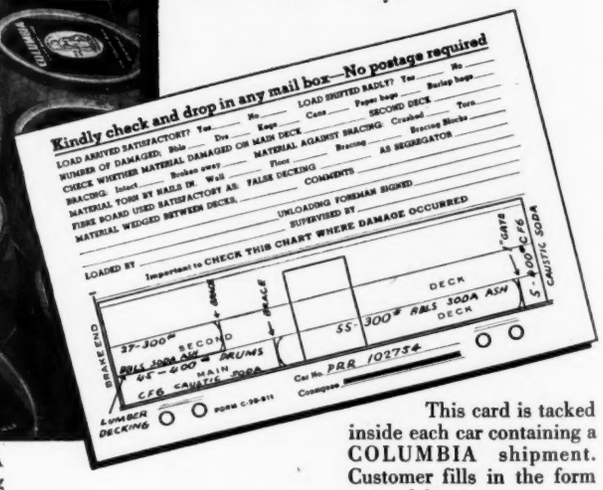
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
GRASSELLI CHEMICALS DEPARTMENT
WILMINGTON, DELAWARE

Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Los Angeles • Milwaukee
New Haven • New Orleans • New York • Philadelphia • Pittsburgh • Rensselaer • San Francisco • St. Louis • St. Paul
Represented in Canada by CANADIAN INDUSTRIES, LTD., General Chemicals Division, Montreal and Toronto

Are You Enjoying These Benefits of *Scientific* Packing?

A shifting cargo may not cause a wreck upon the rails as it does at sea, but serious damage to valuable freight often results from lack of scientific packing by the shipper. ★ COLUMBIA Alkalies are packed to withstand the roughest treatment a hurried freight crew can give them. Through the coordination of various departments responsible for shipping, a careful study was made of loading methods based on customer report cards like the one here pictured. The bracing in mixed carloads as seen in the photograph is by fixed formula of proven merit. Equally scientific provisions for the protection of your order are made in the packing of bagged goods in cars with drums or barrels, or the loading of tank cars. ★ This "plus" responsibility which we assume saves COLUMBIA users much inconvenience and delay.

An actual mixed carload of COLUMBIA Flake Caustic and Light Soda Ash being inspected by the loading foreman just prior to sealing of car.


Kindly check and drop in any mail box—No postage required

LOAD ARRIVED SATISFACTORY? Yes ___ No ___ LOAD SHIFTED BADLY? Yes ___ No ___
NUMBER OF DAMAGED: Bbls ___ Kegs ___ Cans ___ Paper bags ___ Burlap bags ___
CHECK WHETHER MATERIAL DAMAGED ON MAIN DECK ___ SECOND DECK ___ Torn ___
BRACING: Intact ___ Broken away ___ Wall ___ MATERIAL AGAINST BRACING: Crushed ___ Bracing Blocks ___
MATERIAL TORN BY NAILS IN: Wall ___ Floor ___ Bracing ___ AS SEGREGATOR ___
FIBRE BOARD USED SATISFACTORY AS: FALSE DECKING ___ COMMENTS ___
MATERIAL WEDGED BETWEEN DECKS ___
UNLOADING FOREMAN SIGNED ___
SUPERVISED BY ___
LOADED BY ___ Important to CHECK THIS CHART WHERE DAMAGE OCCURRED

This card is tacked inside each car containing a COLUMBIA shipment. Customer fills in the form upon delivery.

COLUMBIA

SODA ASH • CAUSTIC SODA
LIQUID CHLORINE
SODIUM BICARBONATE
CALCIUM CHLORIDE
CALCENE & FILLER
MODIFIED SODAS

THE COLUMBIA ALKALI CORPORATION
EXECUTIVE SALES OFFICES: 30 ROCKEFELLER PLAZA, NEW YORK, N. Y.
Plant: Barberton, Ohio
CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • CINCINNATI • CLEVELAND • MINNEAPOLIS • PHILADELPHIA

DICHLOROETHYL ETHER..*a Chlorinated Solvent*

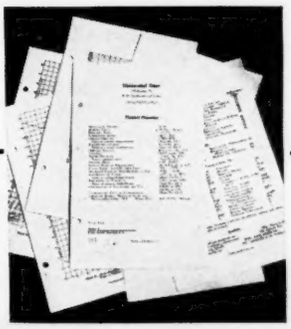
that has become an INTERMEDIATE SOIL FUMIGANT INSECTICIDE

It is well known that Dichlorethyl Ether is especially effective as a chlorinated solvent and is widely used for this purpose. Its further utility as an economical intermediate in chemical synthesis and as a soil fumigant and insecticide control agent is just beginning to be recognized.

Chlorinated Solvent—Dichlorethyl Ether is a powerful solvent for the naphthenic constituents of oils, but a poor solvent for the paraffinic constituents. This makes possible the separation of these portions in such processes as the extraction and refining of certain lubricating oils. Its solvent action on oily and tarry materials aids in the removal of paint and tar brands from wool, and oil and grease spots from cloth. Its high boiling point (178.5°C.) permits its use at elevated temperatures with low-pressure equipment.

Intermediate for Syntheses—Under proper conditions, both chlorine atoms of the Dichlorethyl Ether molecule lend themselves to a number of valuable synthetic reactions. They can be replaced by other chemical groups to form promising pharmaceuticals, plasticizers, insecticides, resins, and synthetic rubbers. The role of Dichlorethyl Ether in chlorethylating reactions, through the formation of dichlorethyl sulfate, is also of interest in preparing various chlorethyl esters.

Soil Fumigant and Insecticide—The application of aqueous solutions of Dichlorethyl Ether to soil infested with Japanese beetle grubs, wireworms, sod webworms, and other soil pests gives successful kills. It is also becoming important as a coupling agent for derris root sprays, giving solutions that disperse completely in mineral oils.



SEND FOR THESE DATA SHEETS

—For information concerning the use of Dichlorethyl Ether, address:

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

Busy Days Ahead for the "Giant that Grew Overnight"

SYNTHETIC COATING RESINS — gigantic young industry of sixty-fold growth in a decade—has still to reach maturity. Research constantly develops new formulae for new applications.

As a pioneer producer of Phthalic Anhydride, Maleic (Toxilic) Anhydride and other synthetic organic chemicals, National confines its efforts to the development and manufacture of resin-chemical raw materials. Our production by direct manufacture assures an uninterrupted supply for the busy days ahead . . . never dependent for quality or quantity upon the production of other chemicals.

We invite your inquiry.

SYNTHETIC ORGANIC CHEMICALS

NATIONAL ANILINE & CHEMICAL COMPANY, INC.

Intermediates Division: 40 RECTOR STREET • NEW YORK, N. Y. • BOwling Green 9-2240

BOSTON	150 Causeway St.	SAN FRANCISCO	517 Howard St.	NEW ORLEANS	Masonic Temple Bldg
PROVIDENCE	15 Westminster St.	CHARLOTTE	201-203 W. First St.	CHATTANOOGA	James Bldg
CHICAGO	357 W. Erie St.	GREENSBORO	Jefferson Standard Bldg.	PORTLAND, ORE.	730 West Burnside
PHILADELPHIA	200-204 S. Front St.	ATLANTA	140 Peachtree St.	TORONTO	137-145 Wellington St., W

BRANCHES AND DISTRIBUTORS THROUGHOUT THE WORLD

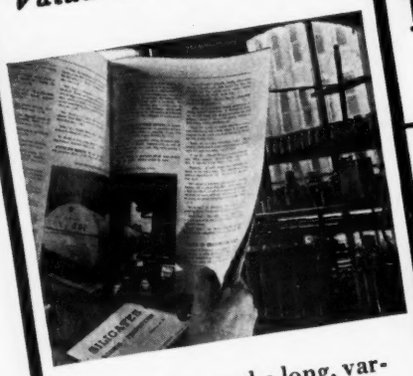
STAUFFER CHEMICALS
CAUSTIC SODA
Stauffer Caustic Soda can be supplied in liquid form in tank cars, and in flake or solid form in drums of 50-100-400 and 700 pounds.
Continuous production on a large scale enables Stauffer to guarantee uniform quality and immediate shipment of fresh stocks from strategically located shipping points.
OTHER STAUFFER PRODUCTS
BORIC ACID : CARBON TETRACHLORIDE : BORAX : TITANIUM TETRACHLORIDE : SULPHUR CHLORIDE : SILICON TETRACHLORIDE : CREAM OF TARTAR : SULPHURIC ACID : TARTARIC ACID : WHITING LIQUID CHLORINE : CARBON BISULPHIDE : TEXTILE STRIPPER : SULPHUR
A DEPENDABLE SOURCE OF SUPPLY
Stauffer
CHEMICALS
STAUFFER CHEMICAL CO.
2710 Graybar Bldg., New York, N. Y.
Carbide and Carbon Bldg., Chicago, Ill.
624 California St., San Francisco, Cal.
555 So. Flower St., Los Angeles, Cal.
424 Ohio Bldg., Akron, Ohio
Freeport, Texas • Apopka, Florida

SPECIFY PQ SILICATES, FOR MORE REASONS THAN ONE!

All Grades . . .

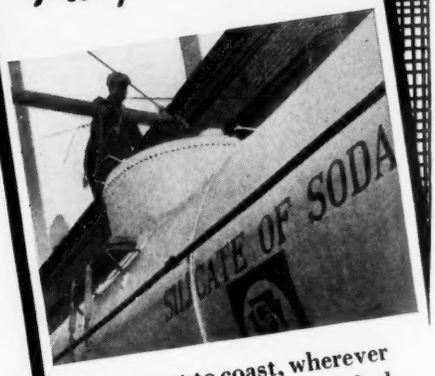
You get the *right* silicate for your use. Since the ratios of its constituents can be varied, sodium silicate is the name of a series of products. PQ has 33 grades for industrial applications. If new commercial processes need other grades, PQ, silicate specialists, can make them.

Valuable Research

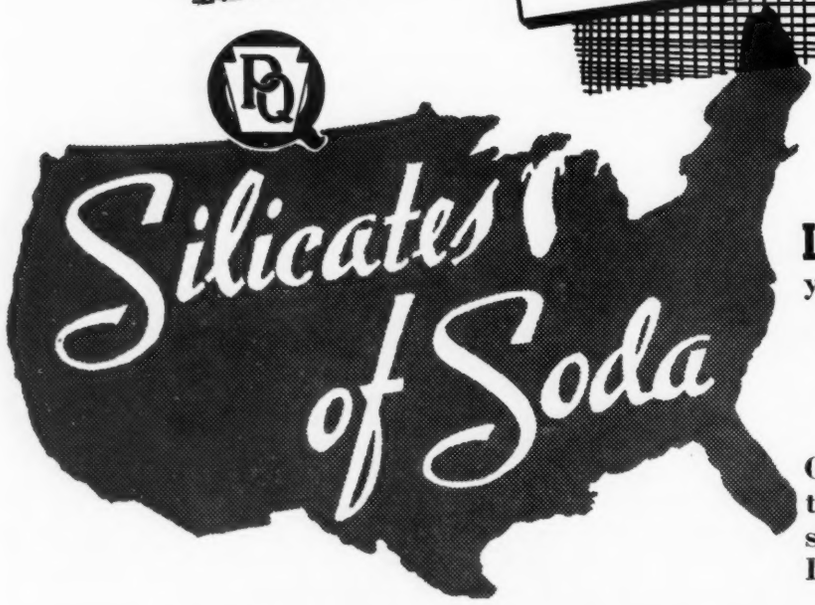


You profit from the long, varied PQ experience in adapting silicate of soda to useful purposes — PQ began to accumulate silicate knowledge 75 years ago. We are glad to take up a specific problem with you. If information is given in confidence, we so respect it.

Prompt Deliveries



From coast to coast, wherever you need silicates, you'll find a PQ stock conveniently located. Eleven of our own and affiliated plants in the USA, and one in Canada, plus distributors' stocks in over 65 cities insure deliveries on time. Often that's money saved also.



IN one of your processes, do you need any of these:

Deflocculent	Detergent
Adhesive	Binder
Inhibitor	Colloid
Agent for flocculation	

One of the soluble silicates in the PQ catalog may prove a short cut or an improvement. Let's talk it over.

PHILADELPHIA QUARTZ COMPANY

Established 1831 General Offices and Laboratory: 125 S. Third Street, Philadelphia, Pa.
Chicago Sales Office: Engineering Bldg. Sold in Canada by National Silicates Ltd., Toronto, Ont.

TO THE men in industry who appreciate the importance of having high quality chemicals of dependable uniformity, du Pont products offer many worthwhile advantages. They help to maintain manufacturing schedules along predetermined lines of quality and cost.

Each du Pont chemical is manufactured to meet industry's standard requirements, to give the expected results in practice. Manufacture is supported by a program of research and product development—to effect continuous improvement in quality, to reduce the cost of the chemical and to create better products for new requirements of industry.

With these uniform products made under strict chemical control, your production is made easier and more economical. And for their useful application, du Pont offers with them the skillful, practical assistance of experienced technical men.

Visit the du Pont Wonder World of Chemistry Exhibits at the New York World's Fair and on the Boardwalk at Atlantic City

DU PONT
REG. U. S. PAT. OFF.

The R. & H. Chemicals Department
E. I. DU PONT DE NEMOURS & COMPANY (INC.)
Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

NATIONAL CARBON GRAPHITE KARBATE PRODUCTS

TRADE-MARK

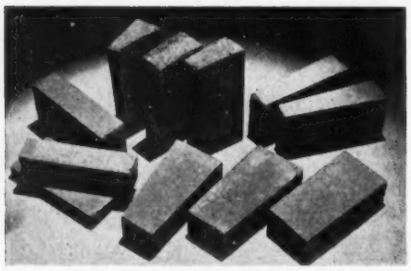
TRADE-MARK

Reduce Losses

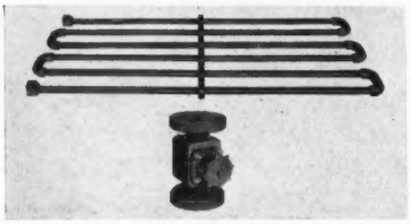
FROM CORROSION, THERMAL SHOCK AND CONTAMINATION OF PRODUCT

● Carbon, Graphite and "Karbate" products are highly resistant to the action of most acids, alkalies and other corrosive materials. They possess good mechanical strength and exceptional resistance to thermal shock.

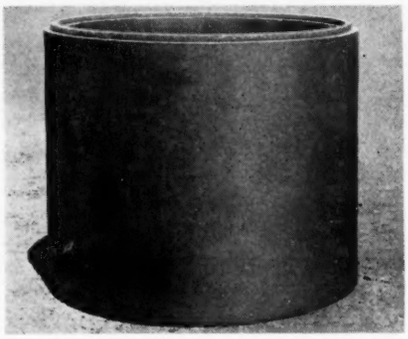
"Karbate" is a brand of material, of carbon or graphite base, which is impervious to the seepage of fluids under pressure. Graphite and "Karbate" No. 2 have high thermal conductivity and excellent heat transfer properties.



CONSTRUCTION MATERIALS — Carbon and Graphite construction materials are available in a variety of forms including brick, flat tile, blocks, beams, tubes and other structural shapes. These products are used for the construction or lining of vats, tanks, towers, digesters and other types of processing equipment because of their high resistance to corrosion and their ability to resist the destructive effects of severe thermal shock. Graphite construction materials are used where high thermal conductivity is needed.

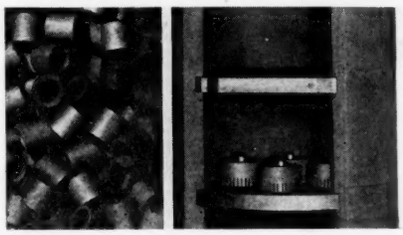


PIPE, VALVES and FITTINGS — Carbon, Graphite and "Karbate" pipe and fittings are available in sizes from ½ inch to 6 inches I.D. Saunders type valves of "Karbate" construction can also be supplied. These corrosion resistant products are used for the construction of heating coils — both steam and gas-flame types, condensers, evaporators, drain lines and other types of conveying, circulating and heat exchange equipment. Carbon or "Karbate" No. 1 is recommended where high heat transfer properties are not desired. Graphite and "Karbate" No. 2 have heat transfer properties equal to steel pipe of corresponding diameter. Plain Carbon and Graphite pipe and fittings are sufficiently impervious to convey fluids at low pressure without disturbing seepage. At higher pressures, or where all seepage must be prevented, "Karbate" materials are recommended.

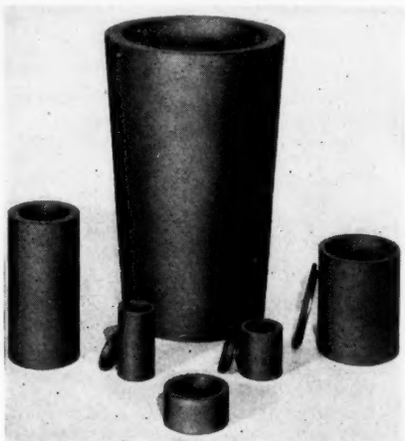


TOWER SECTIONS — Cylindrical carbon tower sections, machined with close fitting tongue and groove joints, can be supplied in sizes up to 33 inches I.D. by 36 inches long. These sections, stacked vertically, provide an economical tower construction for processing corrosive materials.

ELECTROSTATIC PRECIPITATORS — The use of carbon tubes and supporting collars in electrostatic precipitator construction for the precipitation of corrosive materials eliminates expensive replacements. Carbon is also used on some installations for the construction of the precipitator tower and tube supporting beams.



TOWER PACKING — Carbon and Graphite bubble caps, distributor plates, gratings and Raschig rings are extensively used in towers in which acid, caustic or other corrosive materials are handled or where depreciation of other packing materials is rapid due to severe thermal shock.



CRUCIBLES and MOLDS — Carbon or Graphite crucibles and molds are used in the manufacture of a great variety of products. Graphite is usually preferred since solid graphite can be easily machined in intricate as well as simple forms.

Write FOR FULL INFORMATION ON THE PRODUCTS IN WHICH YOU ARE INTERESTED

NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
UCC
CARBON SALES DIVISION, CLEVELAND, OHIO
General Offices: 30 East 42nd Street, New York, N. Y.

BRANCH SALES OFFICES
•
NEW YORK • PITTSBURGH • CHICAGO
ST. LOUIS • SAN FRANCISCO

1868* U.S. GRANT IS NOMINATED PRESIDENT OF THE UNITED STATES

*1868 *Chas. Pfizer & Co. outgrew its modest offices at 17 Beekman Street and moved to 81 Maiden Lane*

¶ Nineteen years old—a sturdy stripling not yet voting age—that was Chas. Pfizer & Co. in 1868. Yet already the foundations were laid for Pfizer's steady future growth and expansion. The firm had already established the reputation it has carried unbroken throughout its ninety years of existence—a reputation for high standards of purity, quality, dependability.

¶ In the years that followed, its reputation steadily spread, as new products were added, new fields of industry opened.

¶ Today Chas. Pfizer & Co. serves industries never heard of in 1868—the modern photographic industry, the great modern domestic dye industry, the new industries concerned with plastics, and many more, together with such old, time-honored industries as food, confectionery and drugs.

¶ And today, at ninety years of age, Chas. Pfizer & Co. is still growing—constantly finding new ways to serve modern industry's ever growing needs.

CHAS. PFIZER & CO., INC.

81 MAIDEN LANE, NEW YORK • 444 W. GRAND AVE., CHICAGO

MANUFACTURING CHEMISTS SINCE 1849

How One Water Works Actually Saved 47%

• Original Cost of Chemicals (per million gal.) $4.41

• Cost using Standard Silicate (per million gal.) $2.34

Source of Water Supply—Surface water from nearby creeks collected in reservoir holding six months' supply.

Daily capacity—Five Million Gallons.

Average Turbidity—30-50 **pH**—7.7

Dosage before using Standard Silicate—2 grains alum per gallon.

Cost—$4.41 per million gallons using alum alone.

Dosage after using Standard Silicate—1 gr./gal. alum. and .3 gr./gal. Standard Silicate.

Cost—$2.34 per million gallons, using alum plus silicate.

***SAVING*—$2.07 or 47%.**

In addition to the lower cost, larger flocs and longer filter runs were obtained. This is not an unusual record. It represents the savings possible through the use of Standard Silicate in your plant. Why not fill out the coupon below and we will gladly send you further information.

DIAMOND ALKALI COMPANY • Standard Silicate Division

Plants at CINCINNATI · JERSEY CITY
LOCKPORT, N.Y. MARSEILLES, ILL.

General Offices • PITTSBURGH, PA.

TEAR OFF AND MAIL

Standard Silicate Division, Diamond Alkali Company, Oliver Building, Pittsburgh, Pa.

Our water supply has the following characteristics:

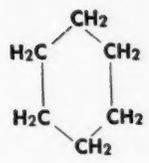
.....**Million Gallons per Day** **Average Turbidity** ..... **Present Dosage**....**gr./gal.** **Coagulant**.....

We would be glad to receive further information on the use of Standard Silicate.

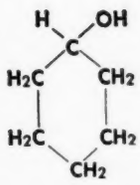
Name..... **Title**.....

Water Works .....**City**.....**State**.....

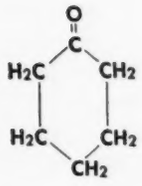
W-3



CYCLOHEXANE



CYCLOHEXANOL



CYCLOHEXANONE

Prices are

Lower

on BARRETT HYDROGENATED COAL-TAR CHEMICALS

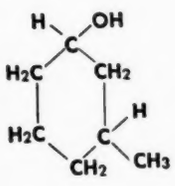
Improvements in methods developed by The Barrett Company—plus increased capacity—have made it possible to offer these cyclic hydrocarbons, alcohols and ketones of 98-100% purity at substantially reduced prices.

A new illustrated booklet, "Barrett Hydrogenated Coal-Tar Chemicals," giving the specifications, other properties and some suggested applications, is now available. Write for your copy today. There is no charge or obligation.

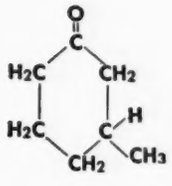
THE BARRETT COMPANY

40 Rector Street, New York, N. Y.

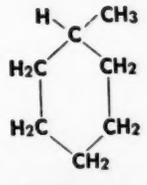
. . . One of America's great basic businesses



METHYL CYCLOHEXANOL *



METHYL CYCLOHEXANONE *



METHYL CYCLOHEXANE

Barrett CHEMICALS

*Formulas illustrate meta isomers. Products are mixtures of isomers, principally meta and para.

HARSHAW
METALLIC SALTS

Aluminum Chloride
Aluminum Nitrate
Cadmium Acetate
Cadmium Carbonate
Cadmium Chloride
Cadmium Nitrate
Cadmium Sulphate
Chromium Acetate
Chromium Carbonate
Chromium Chloride
Chromium Fluoride
Chromium Formate
Chromium Nitrate
Chromium Sulphate
Cobalt Acetate
Cobalt Ammonium Chloride
Cobalt Ammonium Sulphate
Cobalt Carbonate
Cobalt Chloride
Cobalt Formate
Cobalt Nitrate
Cobalt Phosphate
Cobalt Sulphate
Copper Acetate
Copper Carbonate
Copper Chloride
Copper Formate
Copper Nitrate
Copper Phosphate
Copper Sulphate
Magnesium Nitrate
Manganese Acetate
Manganese Carbonate
Manganese Chloride
Manganese Phosphate
Manganese Sulphate
Nickel Acetate
Nickel Carbonate
Nickel Chloride
Nickel Fluoride
Nickel Formate
Nickel Nitrate
Nickel Sulphate
Silver Chloride
Silver Cyanide
Silver Nitrate
Stannous Chloride
Stannous Sulphate
Zinc Acetate
Zinc Nitrate

A pound or a carload—a type to fit your process . . . . Harshaw research has developed production methods, types and grades of various metallic salts to meet specific requirements of many processes, including grades and types suitable as catalysts and catalyst mounts . . . . Chemical and physical properties are controlled by scientific processing and laboratory analysis. Their action in your process is dependable . . . . Order a trial lot.

THE HARSHAW CHEMICAL CO.

Offices and Laboratories: Cleveland, Ohio
Quality products since 1892

New York, Philadelphia, Chicago, Detroit, Pittsburgh, Cincinnati, East Liverpool, Los Angeles, San Francisco. Works at Cleveland and Elyria, Ohio, and Philadelphia, Pa.

DOW

9A

DOW SPECIAL PRODUCTS

This is the ninth of a series of advertisements announcing a list of products for which DOW *has developed new processes of manufacture. The Dow Chemical Company invites inquiries from organizations interested in these products.*

Products	Bromoacetic Acid	Cyanoacetic Acid	α—Amino-Propionic Acid (dl—Alanine)	α—Chloro-Propionic Acid	β—Bromo-Propionic Acid	Malonic Acid
Formula	$CH_2Br \cdot COOH$	$CH_2CN \cdot COOH$	$CH_3 \cdot CHNH_2 \cdot COOH$	$CH_3 \cdot CHCl \cdot COOH$	$CH_2Br \cdot CH_2 \cdot COOH$	$CH_2(COOH)_2$
Molecular Weight	139.0	85.1	89.1	108.5	153.0	104.1
Properties	White to pale yellow, deliquescent crystalline solid with a sharp, penetrating odor.	White to pale straw-colored, deliquescent crystals with a characteristic odor.	White, odorless crystals.	Colorless liquid with a characteristic odor.	White to pale yellow lustrous plates with a sharp odor.	White crystals.
Melting Point	38—43° C.	>63° C.	270—276° C.	<—20° C.	>61° C.	131—136° C.
Solubility Grams per 100 grams solvent at 25° C.						
Acetone	—	108	Insoluble	∞	129	Soluble
Benzene	—	Insoluble	Insoluble	∞	112	Insoluble
Carbon Tetrachloride	26	Insoluble	Insoluble	∞	12	Insoluble
Ether	∞	58	Insoluble	∞	Very Soluble	8
Methanol	∞*	78	Insoluble	∞	Very Soluble	42*
Water	∞	Very Soluble	17	∞	Very Soluble	Very Soluble

*Alcohol

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY *include:* PHENOLS CAUSTIC SODA • ANILINE OIL • ORGANIC SOLVENTS • EPSOM SALT • SODIUM SULPHIDE • DOWTHERM

A complete catalog of Dow Industrial Chemicals will be furnished upon request.

THE DOW CHEMICAL COMPANY, MIDLAND, MICH.

Branch Sales Offices: New York City • St. Louis • Chicago • San Francisco Los Angeles • Seattle

Write Your Own Specifications

and see how closely NATURAL *meets them!*

Compare the value of your "ideal" bichromate specifications with the figures from an actual analysis of our product. So much of this, not more than a certain per cent of that—and so on down the list. Item for item they will parallel. There's a reason for this. Natural has set a high standard to achieve—and does it! May we send you samples?

Natural BICHROMATES

Natural Products Refining Co., 904 Garfield Ave., Jersey City, N. J.

CHEMICAL INDUSTRIES
The Chemical Business Magazine
Established 1914

The One Hundredth A.C.S. Meeting

CHEMICAL INDUSTRIES extends to the officers and members of the American Chemical Society its sincere congratulations on the occasion of the Society's one hundredth meeting held this month in the City of Detroit.

When on the evening of April 6, 1876, in the lecture room of the College of Pharmacy in the old building of New York University on Washington Square in New York City a mere handful of American chemists gathered to found the Society, this country possessed no basic alkali industry, production of concentrated alum had just been announced and a decade was yet to elapse before C. M. Hall was to dramatically produce aluminum electrolytically.

But sixty-four years have passed since that memorable evening. Today the American Chemical Society with over 25,000 members is the largest single scientific group in existence, today the United States is the chemical research center of the world, today American chemical mass-production methods are copied in every corner of the earth and the output of American chemical plants exceeds that of any other three nations combined.

Once again the United States is arming to fight if necessary for the rights of free men and of free enterprise. Contrast our precarious pre-World War position in essential chemicals with our highly fortunate and satisfactory situation now. Then we lacked adequate facilities for nitrogen fixation, we had no potash, and we were unprepared to manufacture in this country many of the necessary dyes, intermediates, coal-tar derivatives, pharmaceuticals and medicinals vital to the successful prosecution of war. Now the chemists of America, backed by far-sighted progressive industrial leadership are ready for any emergency.

In 1917, despite the toll of the U-boat warfare, little fear existed that the combined fleets of Great Britain and the United States would be unable to maintain freedom of the seas and to protect the movement of essential raw materials.

That supremacy is now seriously challenged, but fortunately American scientists are reporting in Detroit to members of the American Chemical Society and to the nation at large that vast strides toward self-sufficiency in vital supplies have been achieved in the laboratories and in the industrial plants of the nation. Through the ability, resourcefulness, courage and initiative of American chemists displayed during the last two decades this country is now virtually independent of the rest of the world for essential materials with but four major exceptions—rubber, tin, nitrogen and a few crude drugs—and even in these substantial progress has been made in a relatively short period, so that we face the future without fear, although it is indeed a sad commentary on the state of world affairs that the one hundredth meeting of a society dedicated to peace, to alleviating the ills of mankind, and to improving the standards of living should be held under the dark clouds of existing international unsettled conditions which now seriously threaten these lofty aims and fine ideals.

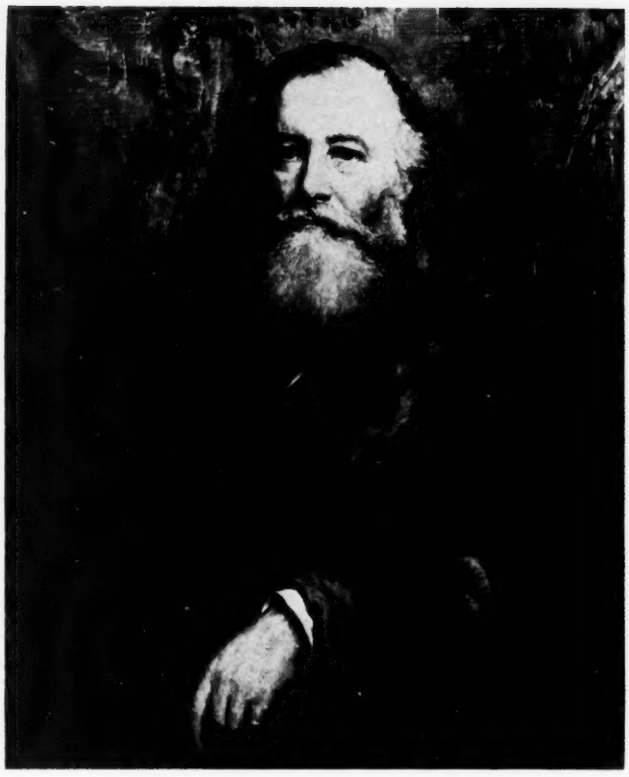
"CHEMICAL PIONEERS"

ROWLAND HAZARD

1829-1898

Father of the American Alkali Industry

By
Williams Haynes



Armed With Only a Proven Record of Sound Judgment and a Business Philosophy 60 Years Ahead of His Time, Rowland Hazard Stepped Out of a Woolen Mill to Found an Entirely New Industry.

IN 1870 a Rhode Island woolen manufacturer bought the oldest, largest lead mine in southern Missouri. The property consisted of twenty-four thousand acres. Its title traced straight back to a royal grant of Louis XIV made in 1712 and its rich rights had been involved in the Louisiana Purchase.

It was, however, distinctly a new venture, foreign to the experience of a family which for three generations had been deep in New England textile interests. As had happened several times before, the practical son of this adventurous, forward-looking mill owner was called upon to stiffen his father's dream into reality.

Thus, the Autumn of 1874 found Rowland Hazard in the midst of the filth and drunkenness of a primitive Ozark mining town. He was at the time a vigorous, seasoned business executive of forty-five, and he had come to Mine La Motte to learn the lead mining business and to revivify this antique operation. Working about fifteen hours a day he did both with exceeding thoroughness, making frequent visits of inspection later.

As he himself described the appalling conditions, he found "the miners living in ignorance, wretchedness, and squalor." He shortened working hours; built decent living quarters; instituted a school. Having introduced into the family woolen mills one of the first profit sharing systems in America, he naturally worked out a system of bonuses for good work.

After one of his visits, he wrote a paper on the Mine LaMotte, which he read before a little group of close friends that had banded together as the Friday Evening Club. They dined at each other's superlatively good tables and sharpened wits over each other's essays. This paper of Rowland Hazard's told the exciting story of this famous mine; described the operations; and modestly recorded the author's innovations. Inquiring into the human problems, he wrote: "Place a people face to face with vast labors, lower the physical tone by an enervating climate, let them find by experience that the labors are too great for their powers; and listless, slipshod habits result with whisky as a relief from trouble." That sentence displays an insight into human nature and broad toleration, remarkable, indeed, in 1875.

Before he left Missouri, Rowland Hazard cast about to find a manager who would carry on the Mine LaMotte with modern technique and in his own spirit of cooperation with the mine people. For this exacting task he selected a rugged, fair-minded, friendly young man, one William B. Cogswell, who had served as a powder boy in the United States Navy during the Civil War and afterwards studied mining engineering. The association thus formed was to last throughout their lives and to have important effects upon the development of the chemical industry in this country.

Young Cogswell entered into his new duties with gusto. Always a prodigious worker, he slaved to modernize the operations and to effect the reforms his employer had initiated. At the end of four years he left the Mine LaMotte for a long, well-earned vacation.

In his heart he hoped—so he confessed years later—never to return. The work was grinding. Living conditions were rough. Companionable society simply did not exist. Yet he had found an understanding, just, generous employer with whom he did not wish to part company. Cogswell recognized that he knew nothing about textiles; but he did know that he had won Mr. Hazard's respect and trust and that he was a man genuinely receptive to new ideas, a real son of an old family of industrial pioneers.

His vacation-scouting trip brought him to the 1879 meeting of the American Institute of Mining Engineers in Baltimore. Among the papers read was one by Oswald J. Heinrich of Drifton, Pa., on the soda ammonia process of the Solvays for the production of alkalies from salt, coke, and limestone.

A native of western New York, Cogswell knew all about the great Onondaga salines. Near Syracuse, too, was plenty of limestone. The best coking coal in the country lay a few miles away in Pennsylvania. He visited Syracuse checking up on various salt works, investigating lime and coal supplies, inquiring into shipments via the Erie Canal. Armed with these facts, at his next conference with his employer, Cogswell proposed to Rowland Hazard that he finance a Solvay alkali plant of fifty tons daily capacity at or near Syracuse. The idea was a new one, but it met with instant response. Chemical independence for the United States and development of our own natural resources made a strong appeal to Mr. Hazard who knew in his own woolen mills the importance of alkalies and appreciated their place in our growing production of glass, leather, and soap. The close association of all the needful raw materials, almost on the banks of the Erie Canal, was clearly a Heaven-sent invitation to American enterprise.

Cogswell had marshalled his figures with care. His employer's interest having been roused, he could focus it upon a practical undertaking with costs and markets, and prices that promised substantial profits. Rowland Hazard was a public-spirited citizen and a generous philanthropist, nevertheless, he was far too good a businessman to mix either patriotism or charity in a chemical-making plant.

This shrewd business judgment, combined with that rare sense of public obligation which distinguished him, came to Rowland Hazard quite naturally by inheritance and environment. He was of the eighth generation from one of the first settlers of Rhode Island, Thomas Hazard, who came to Portsmouth from Boston in 1639. He was one of the six men who laid out Newport, the silver buttons cut from his coat paying the Indians who cleared the brush from the future city site. His

Caroline Newbold Hazard and Rowland Gibson Hazard, parents of the man who first produced alkalies in the United States.

grandson, Thomas, was a great ship-owner and trader and owned the whole of Boston Neck. Thomas' great-grandson, the first Rowland, set up power looms in the little mill on the Saugatucket at Peace Dale, and in turn it was his grandson, the third Rowland, who succeeded his father and grandfather in the woolen business; took over the lead mining interests of the family; and at the suggestion of William Cogswell became the father of the American alkali industry.

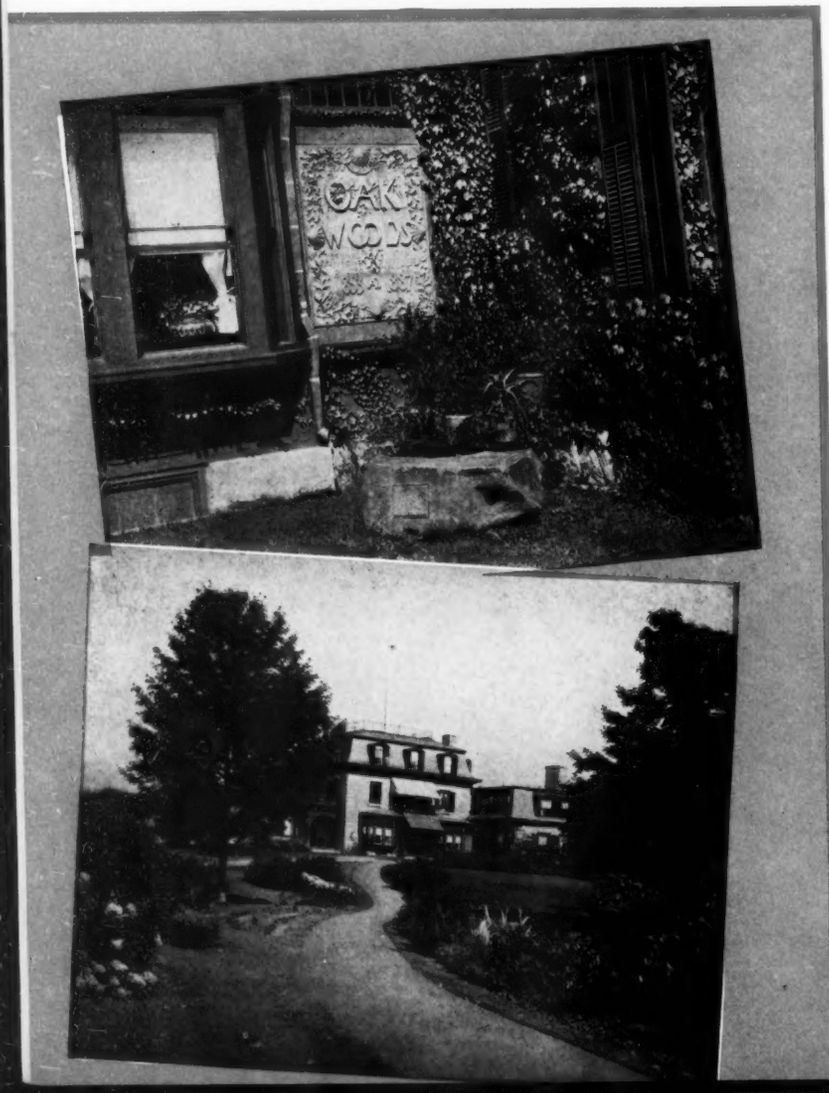
The family were Quakers, and his father, Rowland Gibson Hazard, had been sent to Westown School and had married Caroline, one of six beautiful daughters of John Newbold of Bloomsdale, Pennsylvania. Rowland, their first child, was born at Newport, August 16, 1829; but before he was four years old his parents moved back to the family headquarters at Peace Dale, and it was there he grew up. When he was seven he was sent over to nearby Kingston to study under the Rev. Thomas Vernon, and at sixteen he went off to Philadelphia to enter Haverford College. Because of financial difficulties Haverford temporarily closed, so after one term, he entered Brown University.

He was a capital student and won high honors: University Premiums in Mathematics twice, in Mechanical Philosophy, and in Astronomy, as well as the Jackson Prize in Intellectual Philosophy. At college he laid down a solid foundation of scholarship that supported his abiding interests not only in economics, notably in monetary problems, and in engineering, particularly in construction work; but also in history, art, and literature. At Brown, too, he formed fast friendships with a trio of brilliant young men all destined for distinguished academic careers: President James Burrill Angell of Michigan University, Dean James C. Murray of Princeton, J. Lewis Diman for many years Professor of History in Brown University. These were his closest friends in college and throughout life.

When he entered the family business his habit of conscientious workmanship and his powers of great concentration enabled him quickly to master the details of every branch of the woolen textile industry. Expertly he knew the mechanics and construction of the machinery and he could operate a loom skillfully. Always he liked to refer to himself as a "wool-comber." He had a fine feeling for style and for years as an artist he designed the shawls for which the mill was famous and then as a craftsman laid out the patterns for the machines. But early in his business career he organized his work so that he would have the leisure for his outside interests, for reading, and for travel. As his own sons grew up, when he noted that one was inclined to be a detailist, he warned him that unless he wanted to be a slave to his desk, he must learn to delegate authority and concentrate upon control.

Thus Rowland Hazard lived an exceedingly full and varied life. He designed and built bridges, even a church. He wrote on public affairs and made many important addresses, including the dedication of the cornerstone of the Rhode Island State Capitol. He was the organizer, and for many years President, of the Washington County Agricultural Society, which not only held an annual fair but was year in and out a practical help to farmers and dairymen in southern Rhode Island. He was for many terms the Moderator of the town of South Kingston and served in the State Legislature both as Representative and as Senator. He was a Trustee of Brown University, of the Board of Foreign Missions, of Butler Hospital for the Insane; he was president of an insurance company, and a founder of the Rhode Island Hospital Trust Company.

Efficient executive that he was, Rowland Hazard was first of all a warm-hearted, intelligent human being; a man of high principles, liberal toleration, and broad interests. Devoutly religious, he was the antithesis of the thin-lipped straight-backed bigot. He knew and enjoyed the best of art and literature. He read widely and thoughtfully. He travelled often to Europe, and it is quite characteristic that he made a special journey to the Island of Jersey to buy thoroughbred cattle and that while in Florence he picked up a rare old manuscript, a Bible beautifully illuminated on fine parchment, which had been finished in 1471 on the day of St. Blasius, the patron saint of wool-combers. Had he not been so thoroughly a gentleman and a scholar—in the fine, old-fashioned meaning of that wrenched



Upper—Oakwoods, built by Rowland Hazard 1853; added to in 1887.
Lower—Oakwoods at Peace Dale, R. I., as Rowland Hazard left it.

phrase—the history of our alkali industry would have been quite different.

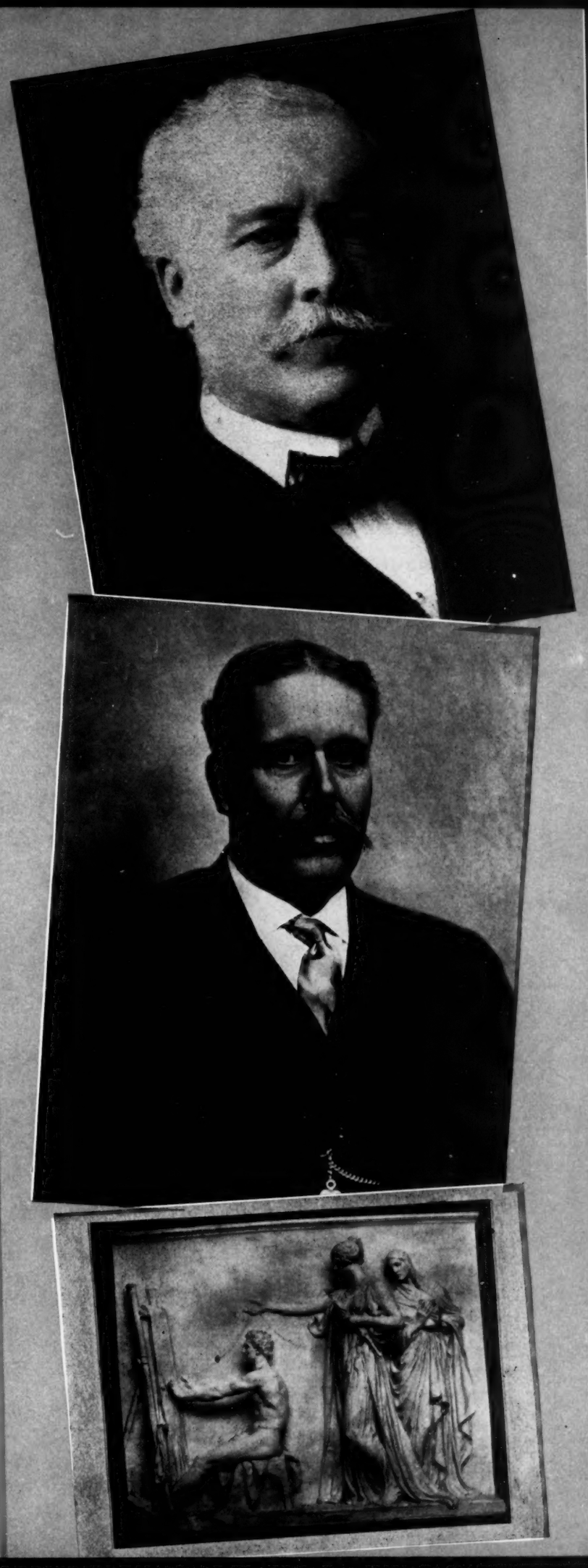
For, although William Cogswell so roused Mr. Hazard's interest in the Solvay process that he was commissioned to go to Belgium in the spring of 1879 to secure the American rights, he found Messrs. Alfred and Ernest Solvay quite frigid to his proposals. They had been prejudiced against an American connection by a previous visitor from the United States. This loud-mouthed promoter had breezed into their office, planted his cowhide boots against Alfred Solvay's walnut desk, tilted back his chair, and proceeded to lay down the terms upon which he would make the Solvays a "blooming, everlasting fortune."

Very softly, but with deadly finality, he was informed: "We are not at this time at all interested in a plant in the United States. Your market is small, and it will be well taken care of by our good friends and associates, the Brunner-Monds, who are just now installing our process in their plant at Northwich, England."

All this was quite true, and indeed there was small reason in 1879 why the Solvays should be particularly interested in American connections. Our consumption was comparatively insignificant. We had no domestic producer, no potential competitor.

A curious combination of happy circumstances had given England dominance of the world's alkali markets. The great alkali of antiquity had been potash—then literally pot-ashes, wood ashes bleached out in great iron caldrons. It was a Frenchman, Nicholas le Blanc, who, back in 1791, had worked out the first commercial soda process using common salt as the starting point. His financial backer was the Royalist Duc d'Orleans, so his tiny plant at St. Dennis was wrecked during the French Revolution; and though Napoleon restored the works to help supply his war needs, he could not revive the broken spirit of the old chemist. Le Blanc crept back to his refuge in the poorhouse and committed suicide. France's great opportunity to become the chemical leader of Europe died thus in pathetic tragedy.

Meanwhile in England the Industrial Revolution was creating new demands for chemicals. Accordingly, the moment the excessive tax of £30 a ton on salt—legacy of the Napoleonic Wars—was withdrawn in 1823, James Muspratt began to make soda alkalies by the Le Blanc process. His chief raw materials, salt and coal, were abundant in England, and the expanding textile, soap, and glass industries were then the world's largest chemical consuming field. But the Le Blanc process labored under the twin difficulties of producing one great waste and one dangerous nuisance. The waste of the sulfur, the sole imported raw material, kept the price of alkalies high. The noxious fumes of escaping hydrochloric acid resulted in costly damage suits and



Top—Rowland Gibson Hazard, who with his brother, Frederick Rowland Hazard (center) followed in their father's footsteps by entering the alkali business. Below—Memorial designed by Daniel Chester French, dedicated to a father and his sons: Rowland Hazard, Rowland Gibson Hazard, and Frederick Rowland Hazard.

forced migrations. In the end, the conversion of both waste and nuisance into valuable by-products enabled the Le Blanc process to stave off for a third of a century the competition of the Solvay process.

The hydrochloric acid gas was first efficiently recovered by William Gossage (1835) and when hydrochloric acid became overproduced, Henry Deacon (1868) worked out the first commercial process for converting it into chlorine. Chlorine absorbed in hydrated lime becomes sodium hypochlorite, the great bleaching agent of that time. The sulfur waste problem was not solved till 1888, when A. M. Chase perfected his recovery process producing sulfuric acid.

Through the Le Blanc process and its associated processes the British chemical industry was making caustic soda, soda ash, bleaching powder, chlorine, and both sulfuric and muriatic acid. They had a rapidly growing domestic market and the whole world to absorb their surplus. Most important of all, an outstanding group of British chemical pioneers—Charles Tennant, James Muspratt, Henry Deacon, Peter Spence, Ludwig Mond, and John Brunner—supplied fine chemical and commercial leadership.

To attack this strong chemical fortress with a new process, even an improved process that is essentially cyclic and continuous, and whose products are exceptionally pure, but which yields only a single, cheap by-product, was a formidable task. The basic chemical reaction of the soda-ammonia process had been recognized by Fresnel in 1810, and as early as 1838 a patent for its operation had been granted in England to Dyar and Hemming. They and several other British firms lost plenty of money trying to develop this very simple set of reactions into an industrial output. Not till 1863 were the knotty problems of this operation unravelled by the Solvay brothers in their plant at Couillet, Belgium.

Second Decade Produced Expansion

Ten years later the Solvay production had reached but the modest total of 3000 tons annually. But the second decade started a phenomenal expansion. In 1875 a branch plant, embodying improvements in lay-out and equipment demonstrated by operating experience, was opened at Dombasle, near Nancy, France. A couple of years later, Ludwig Mond and the Solvays entered into the first of those eminently successful international alliances which eventually built Solvay alkali plants in every industrially important country. In 1880 the Brunner-Mond plant in England was in operation.

At this juncture William Cogswell again called upon Ernest and Alfred Solvay. Although not successful the year before, he had been able to leave with the door ajar for further negotiations. His modesty and friendliness had seeped through the barrier of their preconceived prejudices. His knowledge of the facts and his respect for realities had impressed them. The soundness of the Hazard proposals and Cogswell's straightforward presentation of them, strengthened this favorable impression. On his second visit, Cogswell, a wholly unconscious diplomat, won them over to the point where they agreed that if his analysis of the American situation proved out and his financial representations were substantiated, they would consider his proposals.

In June, 1881, therefore, Rowland Hazard went to Brussels. He was immediately attracted to the two brothers, and they were completely won by his charm and sincerity. The three talked the same language. Negotiations went forward swiftly to a basic agreement, and his diary records three long, warm, exhausting days during which the contract was written, phrase by phrase, with scrupulous care to prepare a legal instrument so fair in spirit, so exact in wording, so inclusive in its terms that once executed "it could be put in the safe and forgotten." They were able to write just such a contract.

Accepted Stock, Never Cash

It was indeed "a meeting of minds." Ernest Solvay was a realist. His brother Alfred a visionary. They agreed upon certain principles in building up their truly international enterprises — ideals of Alfred's which Ernest materialized. To these principles Rowland Hazard heartily subscribed.

These tenets and their beneficial effects have been summed up by Dr. Louis C. Jones, one of Mr. Hazard's "bright young men" who went straight from Yale into the post of chemist in the first Syracuse staff, when he said:

> Ernest Solvay believed in national self-sufficiency, and often against the counsel of less far-sighted associates, whose longing eye was fixed on export markets, he furthered projects in new countries. His rule, which I believe was invariable, of never accepting cash or royalties; but always of taking his financial reward in common stock of associated companies, only confirms his fundamental conviction. This stock participation made possible an exchange of information between plants in different countries which had far-reaching, beneficial effects. Each month every Solvay plant sent to headquarters a complete table summarizing their operations in detail as to power and raw material consumed, and all labor costs per hour. So detailed were these that the table was the size of two newspaper pages. These were all reduced to common cash values and for the comparison of every section of all operating departments. Your chagrin if you were low man and your elation if you were high in such a great international game, were very real. Thus, too, any improvement in one plant was quickly spread through the alliance. The Russians, for example, made a very important saving in the drying of dense ash. Cogswell contributed improvements in the cooling towers which greatly increased output, and our Andrew H. Green of the Detroit plant, later vice-president, refined the methods of precipitating bicarbonate.

Following the Solvay pattern, soon after that contract had been signed, three young Americans appeared at Dombasle. All were youngsters just out of college: William L. Neil, an engineering student in Germany who had served Cogswell as interpreter on his second visit to Brussels, E. N. Trump from Cornell, and Harry R. Cooper from Pennsylvania. After an all-too-brief apprenticeship they hurried back to Syracuse, and Trump, an engineering genius who years later succeeded Mr. Cogswell as the chief operating executive,

began translating from French the complete set of plans which the Solvays had sent over.

That Autumn, 1883, Mr. Hazard sent his second son, Frederick, over to Dombasle. From September to the following May he went through this practical training for his life work as his father's representative, and sixteen years later his successor as President of the Solvay Process Company.

January 9, 1884—"Telegram from Cogswell of first soda made at Syracuse, at 1:30 P. M."

That laconic entry in Rowland Hazard's diary tells little of the birth pains of the new works. They have been vividly described, however, by E. N. Trump in his speech at the celebration of the company's twentieth anniversary:

> With only three or four men who had ever seen the inside of an ammonia-soda works and with men who were either farmers or salt boilers and who knew almost nothing of machinery, it was not surprising that we had some difficulties in starting. The first night, just as the soda was drawn from the columns, nearly all of us were almost suffocated by carbonic oxide gas; Mr. Cooper was badly hurt by a fall, Mr. Cogswell received a black eye, and I had to take Mr. Cooper's place and run the works in addition to my other duties. During that winter we all worked from twelve to fourteen hours a day, sometimes thirty-six hours at a stretch.

Troubles arose chiefly from the apparatus, for the ammonia-soda process was the first gas-pressure, distillation-evaporation, continuous operation which American equipment makers had ever been called upon to install. Naturally mistakes were made, but eventually the kinks were all ironed out. Seven months later the Syracuse plant was able to double its projected capacity of fifty tons daily.

Build By-Product Plant

Initially ammonia was bought from the local gas companies. By 1890, however, the company built for its own use the first by-product recovery coke plant in the United States. Two years later a second set of ovens was built. The next step was easy and logical so that the third by-product plant was built for an outsider, the Tennessee Coal, Iron and Railroad Company at Enslie, Alabama. From this naturally developed the business of coke oven construction, which during the World War led eventually to production of phenol just as the ammonia experience led to synthetic nitrogen.

But we are thirty years beyond the story of the pioneer who brought the Solvay process to America.

The building of so great a business structure demands a very solid foundation. This was laid down by Rowland Hazard. His life-long habit of straight thinking and fair dealing became the guiding policy of the company, and his associates have testified that, having brought the Solvay process to America, it was Mr. Hazard's skill as administrator and financier and Mr. Cogswell's talent as an operating engineer that made the enterprise a success. This was quite the regular Solvay pattern of twin executives, one technical and one commercial—Ernest, the chemist, and Alfred, the industrialist; in England, Dr. Ludwig Mond in the plant and John Brunner in the office; in the United States, William Cogswell and Rowland Hazard.

With the Solvays, Rowland Hazard shared a conscientious sense of responsibility to country, to customer, and to employee. The first prompted those ideals of national self-sufficiency in chemicals which enabled the great Solvay international organization to function with a minimum of jealous friction. These dove-tailed with Mr. Hazard's vision of American independence in alkalies. The second formulated sales policies based upon service rather than pressure. In those days of cut-throat chemical competition, this was a constructive contribution to the entire industry. The third established at the great alkali plant at Syracuse the same friendly labor relations that had grown up in the woolen mills in Rhode Island and the lead mine in Missouri. The operations were under the direct control of the same hard-working, friendly engineer who had made these innovations in the Ozark mining town, who won among his workmen the affectionate nick-name of "Alkali Bill." It came to be a by-word in Syracuse that "at Solvay few die and none quit."

Never Drew President's Salary

It was also quite in the Solvay tradition that although Rowland Hazard served as the active head of the Solvay Process Company from its organization in 1884 till his death in 1898, he never drew a dollar of salary as president. He was content with his dividends, and by making stock participation possible for key men, there was fostered a real feeling of profit-sharing.

Such inspired leadership was as important as the financial backing which first brought the large scale manufacture of alkalies to the United States. Rowland Hazard was the guiding genius of the enterprise. Yet he held the reins of administration and operation lightly. William B. Cogswell, E. N. Trump, and John D. Pennock all shouldered weighty responsibilities; and his second son was trained to carry on that leadership.

The second son, Frederick R. Hazard, after his graduation at Brown and a short time in Peace Dale, went in September, 1883, to the Solvay Works in France. He kept workman's hours, rising at five, and all winter he worked in the great *Usine,* learning the process from its foundations. He showed such progress that he was elected a director of the Solvay Process Company and assistant treasurer at the annual meeting in April. Mr. Cogswell was treasurer and general manager. In May, 1884, on young Hazard's return, he went to Syracuse, and Mr. Cogswell took a deserved vacation, so that the young man who had a longer training in France than anyone on the staff, had charge of the works with Mr. Trump.

At the death of his father in 1898, he became president of the company, with his brother Rowland, vice-president, another example of brother supplementing each other in working for a common end. In Syracuse he lived, married, and died, his whole life intimately interwoven with his company and its community.

River bottom Carnauba palm trees.

CARNAUBA WAX

From Plantation to Industry

Carnauba Invariably Becomes Prominent in the Chemical Field During Periods of World Unrest. Thus, This Comprehensive Study of the Material Becomes More Valuable Because of its Timeliness.

PART I

THE carnauba wax situation has during the past four months become a constant headache to importers as well as to users of the wax. Prices of all grades of carnauba wax have increased since last fall and during the first part of April reached a new high for the year when No. 1 Yellow was selling for about 80c a pound. However, the all-time record still remains at the unparalleled price level of the last war when this same grade of wax was selling at $1.25 a pound. Immediately after this April record, carnauba prices began to drop and the users of the wax began to breathe a sigh of relief. Prices fell at a moderate rate. During the second week of August No. 1 Yellow was selling at 57c a pound. However, since then the market price has begun to slowly rise. Going into the week of August 19th No. 1 Yellow was selling at 62-63c a pound with a slow rise still ahead.

The importer has found that he has had to take chances with his future sales because of the rapid fluctuations in the market. In more than one case a future price was quoted by the importer only to be broken later because of the rise in price which would have been impossible to fulfill. The carnauba market has become very speculative in the past few years. The drop in the carnauba prices during the middle of the summer was due somewhat to the decrease in demand for the product. Also importers and dealers were holding back on the market and did not hasten to relieve themselves of their supply of waxes. It seemed that each was waiting for the other to make the first move. However, during the first two weeks of August demands became heavier and prices began to rise slowly.

The demand for carnauba wax in this country has been particularly heavy since the first of the year and already some users are beginning to feel the effect of a shortage. The question now is just how long will the present supply last. The wax now being used is from the December and January crop. The next extracting season is during the months of August and September. It will take some time for harvesting this supply to meet the demands of the users who are gradually becoming impatient because of their needs. There has been some talk of substitutes which, however, never have and never will meet the demands which the true carnauba wax now meet. Some manufacturers have been able to keep using cheaper grades of carnauba wax or sometimes other less expensive and poorer waxes. No reports as yet have been received on the new crop and it is impossible to tell how much wax will be on hand in November. This is one of the chances that must be taken by those who deal with this commodity.

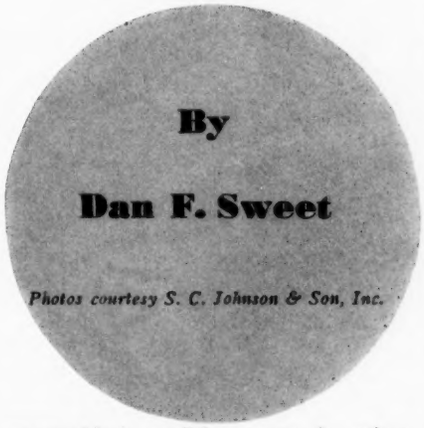
The 1939 crop in Brazil was actually short, due largely because of the excess

A native filter press. Natives use this crude means of filtering molten Carnauba Wax to remove leaf fibres and other impurities.

rain in Brazil rather than cutting down on production of the wax. The country encountered unseasonal rainfalls at important times when dry weather was sorely needed for the harvesting. This resulted in a late crop and cut down the average yield of wax per tree.

Ever since the war began it was the opinion of some that the European countries would withdraw from the carnauba wax market. This, however, has not been the case. It is reported that more carnauba wax is now going to Europe than before. But these European users have been buying a great quantity of the wax through American markets. This re-exporting has been an additional factor in keeping the carnauba wax prices high. England and Australia have increased their demands since the outbreak of the war. Germany, the Netherlands, France and Italy were other leading markets for the wax before the existing European conflict began. Brazil is still shipping wax to Germany and her ally, Italy, but at present the sizes of the shipments are not known definitely. The United States still uses about 80 per cent. of the crop. Although shipping and insurance rates have increased, American shipping has encountered no difficulty in plying between Brazil and the United States.

The carnauba wax market is one in which costs rise rather than fall with increased production. As demands increase it becomes all the more difficult to meet these demands. Costs of gathering the wax increase because as the carnauba tree grows older the quantities of wax obtainable from each tree decreases. This means that more labor is needed to gather the additional leaves and longer time is taken to remove the wax from them. With the increased demand for the carnauba wax, the gatherers have had to extend their operations much further into Brazil than previously. This means that transportation costs increase, labor becomes scarcer and also climatic and



geographical conditions must be taken into consideration.

Because of the great demand for carnauba wax, especially in our rapidly expanding industries, it is hard to believe that prices of the wax will remain where they are now. It is only reasonable to assume that under present day conditions carnauba prices will remain at high levels.

The carnauba palm, which a number of years ago was referred to as the "tree of life," has only in the past 15-20 years become of great importance in a great many varied uses. However, the primary use for the tree in the United States is through the use of its wax which is produced by nature as a protector to the tree in times of drought and varied climatic conditions.

Carnauba wax is a very hard, brittle substance with color ranges from a deep brownish slate to a very light yellow, depending on the grade, which will be discussed later. The melting point of the wax is from 78-85° C. (172.5-185° F.). This property helps account partially for its large demand because this melting point is the highest of all vegetable waxes.

Carnauba wax chemically consists chiefly of a myricyl cerotate and small quantities of free cerotic acid and myricyl alcohol. This wax is not readily saponified by alcoholic solutions of alkaline. The iodine value is 7 to 14 centigrams. Its specific gravity at 15° C. is 0.990. The degree of viscosity is 42.03 to 43.03. The chalky grade of the wax contains about 92 per cent. wax, 1.9 per cent. humidity and 5.7 per cent. mineral residue. The color ranges from a deep brownish slate to a very light yellow,

Above-Shaded areas on map designate Carnauba country. At right is fine specimen of a Carnauba Palm.

depending upon the grade as will be seen further on.

The composition has been very fully examined by Stürcke (*Annalen*, 1884, 223, 283); he found that the principal constituent is the myricyl ester of cerotic acid ($C_{27}H_{55}O_2C_{30}H_{61}$), or as the free acid was not crystalline, it may perhaps be the ester of an isomeride closely resembling cerotic acid; that it contains a considerable quantity of free myricyl alcohol $C_{30}H_{61}OH$; and that minor constituents, isolated after saponification are: (1) a hydrocarbon with m.p. 59°-59.5° C.; (2) an alcohol $C_{26}H_{53}CH_2OH$ with m.p. 76° C.; (3) a dihydric alcohol $C_{22}H_{46}(CH_2OH)_2$ with m.p. 103.5°-103.8° C.; (4) an acid $C_{23}H_{47}.CO_2H$ with m.p. 72.5° C., isomeric with lignoceric acid; and (5) the lactone

$$C_{19}H_{38}\begin{matrix}CH_2\\ \\ CO\end{matrix}>O$$ with m.p. 103.5° C.

The uses of the wax are numerous. All of us are familiar with the use of wax as a base for floor, shoe, furniture polishes and candles. The phonograph record is one of the every day products in which wax is used and is made of a composition containing carnauba wax. However, those are more of the well-known uses for the wax. How many of us realize that carnauba wax is used in the insulation of electrical equipment. Our toasters and electric irons today all have some of this wax as an insulator. In a resin and paraffin preparation the wax can be used to waterproof wrapping paper and pasteboard. Carnauba wax is used as a raw material in the preparation of lubricants and greases and also varnishes that will withstand washing. It is used also in the making of carbon paper, whose quality it improves by preventing carbon smudges on hands or on the paper with which it comes in contact. It enters in the manufacture of photographic films, chalk, matches and soap. As an ingredient in salves, ointments, and unguents (taking the place of resin), it is a very familiar product to pharmacists and manufacturing druggists. Dry batteries are also sealed with a wax compound which is composed largely of carnauba wax. Artificial fruits and foods which are used for window and counter displays contain five to ten per cent. carnauba wax. One of the more recent uses of the wax is in the citrus fruit industry. The fruit is dipped in wax baths containing a mixture of carnauba and other vegetable waxes. This addition to the fruit along with some coloring of the skin gives it a more healthy look and adds body, fills pores and helps prevent decay by sealing the skin. More recent experiments have been made on the coating of vegetables with the wax, especially turnips.

The principal use of carnauba wax today in the United States is in the manufacture of the water emulsion type of floor polish. This is also called dry bright polish. It is a water emulsion of carnauba wax formed with soaps and lately with a volatile organic emulsifying agent which leaves a thin, hard coating of wax on the floor with a fair amount of gloss. This emulsion type of polish is easily applied to the floor with an applicator on the end of a stick and relieves the housewife of getting down on her hands and knees to apply the polish which was necessary with the paste type formerly the only type available. It was also customary to rub this paste polish to obtain a high luster. Probably about one-third of all carnauba wax imported is consumed in the water emulsion type of polish. About 6/10 of a pound of carnauba wax is used for each gallon of polish. However, some of the better grades have a higher wax content.

Supply Factor

The carnauba wax forms on a straight-trunked palm and is now treated as a species of an American palm with the scientific classification of *capernicia cerifera*. The palm grows very slowly and after fifty years it seldoms attains a height of more than fifty or sixty feet. Its average height, however, is 25-35 feet and it attains a height of only 5 feet after twenty years. The bark of the lower section of the tree is very rough, thick and scaly and provides the tree with a natural protection.

The tree has a crown of broad, webbed leaves which grow out from yard-long petioles in wide serried fan shapes. Nature has coated the blossoms, fruit, leaves and the young shoots with a thin

layer of wax. This layer protects the tree from the destructive action of the atmosphere and helps conserve moisture within the plant by preventing evaporation from the large expanse of exposed surface of the leaves and fruit. Nature has provided the tree with a coating of this wax because in the regions where the carnauba palm tree grows water is available for only a short period during the year. It is vital then that the tree have some system for storing up this much needed moisture for future use in times of drought. The ovaloid fruit which is very small (less than one inch), resembles a hazel nut and after falling to the ground when ripe often springs up in a dense clump of shoots. A few of these shoots usually survive the climate and become saplings. The carnauba tree has a preference for dry soil, or at least that part remaining dry during the greater part of the year but subject to periodic flooding by inundation. It seems that the drier the season the more wax forms to hold what little water there is from evaporation. However, when the rains occasionally fail in the supposed rainy season many of the carnauba palms eventually succumb but yield more wax than the average. The flowers of the tree are quite small and numerous and grow from an appendix in the axils of the leaves. There is no master root of the palm but a number of practically the same size. These stretch in all directions quite near the surface in search of moisture.

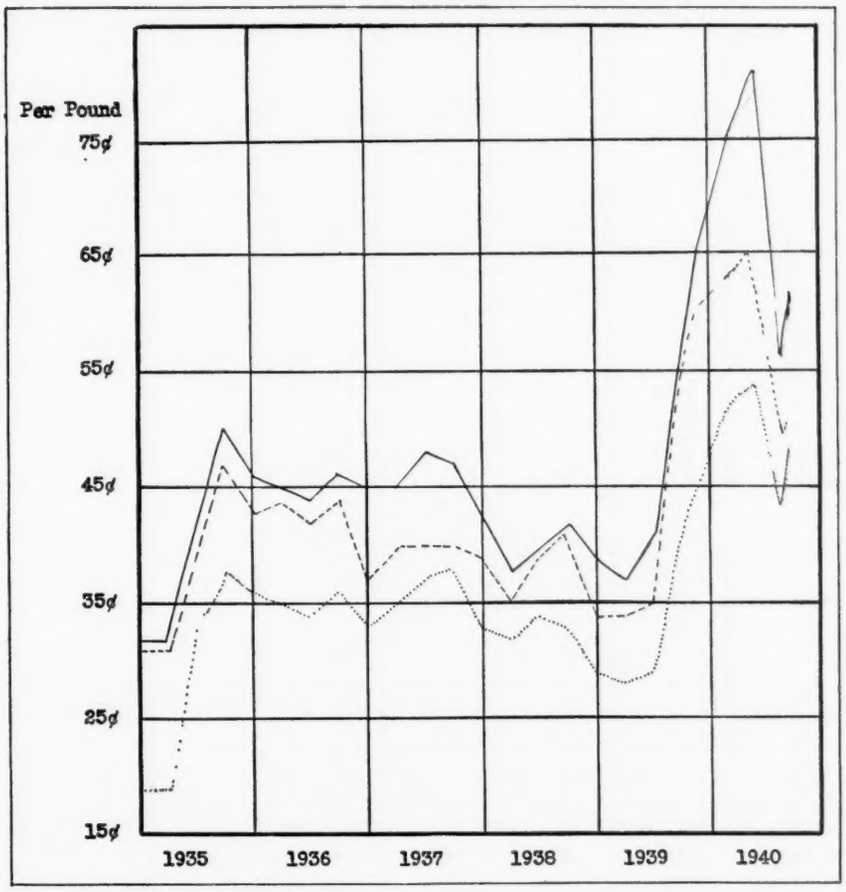


Chart shows price trends of several grades of Carnauba during past five years. Note sharp rise when latest World War broke out. No. 1 yellow at the top, No. 2 chalky in the center, and No. 2 North Country below.

The carnauba palm tree furnishes a number of valuable products in addition to the wax. The timber of the tree is exceedingly hard and from it are built houses, especially the framework for the natives living in the producing regions. The timber is suitable for underwater construction, especially in salt water, and is used for pilings in the waters of the northeastern coast. The wood makes excellent furniture and because it is almost impervious to insect attack it is used in the construction of fences and bridges. Although the trunk of the tree is too hard for common firewood it has been successfully used as an industrial fuel because of the intense concentrated heat which is given off. The wood is also used in parts of musical instruments and pumps because of its hardness. The fruit and the end shoots of the palm furnishes a great deal of food value. From the young shoots a very edible palmito (heart of palm) is obtained. Wine and vinegar as well as a sugar substance can be also extracted. The fruit when dried and crushed can be converted into cooking oil which is used quite a great deal in Brazil. Even when the fruit is roasted and pulverized a brew resembling coffee can be made. Starch is made from the softer pulp of the wood and is not an unpleasant food in times of necessity. Also from this fermented starch pith an alcoholic drink can be made. From the roots a preparation is extracted which somewhat resembles sarsaparilla. In times of excessive drought and when other plants die the young saplings and tender shoots of the palm are fed to the starving cattle. The pith of the tree is also used for corks, salt is extracted from it, and so is an alkali which is used in making soap.

The important hat industry of Ceara uses the fibers of the carnauba palm tree. These hats resemble Panamas and are used extensively throughout Brazil. Hammocks, fishing nets, ropes, baskets, mats and curtains are made from the fibers. The fiber from the petiole is made into brooms and brushes. The natives of Brazil began using the wax for candles to light their homes and today this is still the chief means of illumination in sections of the country which haven't been replaced by oil lamps and electricity.

We can readily see that even though the wax were useless the carnauba palm would still be the most useful single plant in Brazil.

Distribution of the Tree

The carnauba palm is not cultivated. It grows spontaneously and in great abundance in the semi-arid Northeastern part of Brazil. It prefers to grow along the banks of rivers and lakes, but is also found in small isolated groves from the damp lowlands along the coast to the forests of the interior. On dry ground, and on ground that is dry during a great part of the year, although subject to periodic floods, the carnauba develops very well. The natural habitat of the palm extends from Bahia, near the banks of the São Francisco River, to the murky Amazon. It grows more extensively along the river beds lying between the state of Parahyba on the South and the Parnahyba River on the North. Around this region are numerous other rivers which contribute their share in the production of the tree.

The rivers run through the valleys of the Piranhas, Assũ, the Peixe, the Ipanema, the Jaguaribe, the Coru, the Coreaoũ, the Acarahũ, and Mossorõ. The states through which these rivers run are in order from North to South; Maranhao, Piauhy, Cearã, Rio Grande do Norte, Parahyba, Pernambuco, Alagóas, Sergipe, and Bahia. Because of more favorable climatic conditions and also the accessibility to the tree the states of Rio Grande do Norte, Maranhão, Cearã and Piauhy are the principal source of the palm. In the Northeast we find that a practical distinction is made between the white and red carnauba. The spiral volutes of the extended petiole in the white turn right while in the red they turn left.

Although this palm grows in other adjacent South American countries it is only in these certain states of Brazil in

which the palm produces the wax. This is due to the regularity of the rainy and dry seasons. In Ceylon some carnaubas were planted thirty or more years ago, and although useful in many ways, have not produced any wax at all. The same is true with the carnauba palms that were cultivated in French Equatorial Africa. However, the Ceará state government decided that it should prohibit the export of seeds in 1935 because it was afraid that the same thing would happen as did to Amazon rubber, which today is being cultivated in many places. Certain other northeastern state governments, particularly the government of Rio Grande do Norte, have encouraged the cultivation of the carnauba palm.

Planting and Growing

It has only been in the past relatively few years that cultivation of the carnauba palm has been carried out to any appreciable extent. In most regions the palm grows spontaneously and is not given any attention at all. The growth of the tree is exceedingly thick along active river beds. This is due to the washing about of the seeds during times of torrential rains. Thus new growth is propagated through the transportation of the seeds in times of floods. To date, most carnauba palms are still in the wild state.

In order to hasten the growth of the carnauba, the seeds, when planted, should be abundantly watered. After close attention and frequent watering the palm should sprout within thirty to forty days. The wax yield begins after about seven years and under normal conditions the full yield is reached in ten years. It is only when the cultivated palm is in its first year's growth that any attention is required and after that time the palm is allowed to grow. But since all of the palms are in the wild state there is little need for attention. It has been estimated that a tree produces, on the basis of an average yield of about 100-150 grams, (3.5-5 oz.) of wax per season. Sources have estimated that there are over 50,000,000 trees in production and of these 20,000,000 are in the states of Ceará and Piauhy and 5,000,000 or 6,000,000 in the state of Rio Grande do Norte.*

Harvesting

The cutting of the leaves and sprouts preparatory to extracting the wax generally takes place during the dry months of the year and normally occurs between August or September and December and January. However, if winter rains are late the wax may be gathered during the month of February or even later. We can see the sharp differentiation between wet and dry seasons by comparing the rainfall statistics collected over a period of thirty years and published in "A Ceara no Centenario do Independencia." Along the lower valley of the Jaguaribe River and along the coast near Fortaleza the mean rainfall is 43-51 inches between February and June and only 8-12 inches between July and September.

The harvesting of the wax takes place under one of three common systems. The most generally practiced one is where the proprietor of the land on which the tree stands rents the tree land to "moradores" who are a class of semi-nomadic cattle-raisers who roam about from pasture to pasture and from water-hole to water-hole. These large tracts of land, on which the carnauba grows, are generally owned by the wealthier class of the Brazilian population who generally live in cities. The stands of the trees are usually gaged by the lessee and a rental based on the number of trees and on the prospects of the yield of wax. The morador usually contracts the proprietor of the land, who in many cases is a small trader who takes the wax from the harvester.

The second method of harvesting is a kind of sharecropping method known as "colheita par parceria" (partnership harvest). In this case the moradores are permitted to squat on the land on the condition that they will assist in the carnauba harvest and will in turn receive a share in the profits. The third system is simply the proprietor hiring labor to remove the wax and melt it for shipment.

The actual production of carnauba wax is very crude and methods have improved very little in the past number of years. The harvesters are equipped with a sharp sickle-like knife fastened to the end of a long pole. In a normal year there are two or three cuttings per tree and a maximum of about twenty leaves can be cut from one tree during the season. This is usually done in about three cuttings—ten leaves on the first cutting and five on each of the next two. However, when the dry season is prolonged as many as five cuttings per tree may be made. In times of increased production there is more of a chance of the tree dying because of the added number of leaves being cut from the tree. In times of drought the tree stores up as much as 30 per cent. more wax because of the need for holding in the moisture in the tree and preventing evaporation. At least a period of eleven to thirteen weeks should elapse between cuttings. Only the leaves on the upper half of the foliage ball are cut because they lose a good quantity of their wax coating when they pass below the horizontal. A few leaves of the tree are cut from the cabbage of the ball before they have actually opened. It is from these leaves that the lighter colored grades of wax are obtained. In cutting the leaves the workers have to take great care and not remove those that are too young, or the tree will die slowly. At the same time workers must not wait for the leaves to obtain full maturity because the leaves will bear a relatively small amount of wax. The young leaves sprout upright from the tree and they bend outward and downward as they mature. After the leaf has reached the vertical position and is hanging downward no more wax can be expected from the tree.

The leaves are gathered together and have their long stems slashed off and are divided into two groups—the open leaves or "palhas," and the closed leaves or "olhos." These leaves are transported to the drying terrace on the backs of donkeys. The drying takes from three to five days.

After drying, the leaves are transported with great care to a shed for trenching, threshing and beating. These operations are performed preferably at night, when air conditions facilitate the settling of the powder. The shed in which the wax beaters work is about 15 feet long and 12 feet wide and must be constructed so that no air passes in or out. The first operation is that of trenching the leaves over tooth-like iron blades fixed upright in a heavy block of wood. The leaves are slashed against the teeth and pulled toward the worker, thus splitting the ribs apart and opening the web of the leaf. The next worker seizes the leaf and rips it apart causing the wax to loosen. The third movement consists of beating the bunches of leaves across a kind of wooden sawhorse to remove the rest of the wax. The wax is then swept into baskets, bins, tins or closely woven bags preparatory to melting. Even the walls and the roof of the hut are brushed to recover all of the wax. The workers who extract the wax powder receive 4 milreis to 5 milreis ($0.23 to $0.28) per thousand leaves, and three of them can usually handle three to four thousand a day.

The yield of a tree will vary with the amount of rainfall and also with the age of the tree. However, on an average a leaf will yield about 5 grams of wax. If a maximum of twenty leaves cut from a tree are considered, then five carnauba trees will produce about one pound of carnauba wax a year.

The production of the wax during recent years, according to estimates, is as follows. An appreciable amount of this is used in Brazil. These figures are estimates.

Year	Amount in metric tons	Amount in pounds
1930	7,835	17,268,340
1931	7,038	15,511,752
1932	9,557	21,063,628
1933	8,223	18,132,215
1934	9,412	20,753,460
1935	10,000	22,050,000
1936	9,500	20,947,500
1937	15,000	33,075,000
1938	10,000	22,050,000
1939	15,000	33,075,000

EDITOR'S NOTE:

The second part of this article dealing with the processing of Carnauba wax will appear next month.

* "Carnauba" bulletin, No. 1, Rio Grande do Norte Secretaria Geral . . . official production and export statistics.

The Pulse of Opinion—

Continuing Chemical Industries' Symposium on the Outlook in Strategic Raw Materials

Manganese

LANGBOURNE M. WILLIAMS, JR.
President
Cuban-American Manganese Corp.

THE second World War and the United States' re-armament plans emphasize sharply our lack of manganese. The war threatens the continuance of our imports from abroad; re-armament means increased need for steel, in the manufacture of which manganese is essential. Domestic production of ore of the grade required by the steel industry has supplied only a small part of our recent consumption. Nearly three-fourths of the supply has come from the Eastern Hemisphere—Russia, African Gold Coast, India, South Africa—sources made increasingly doubtful by the war. Cuba, where a new flotation process has been developed to use low grade ores, and Brazil are the two most important Western Hemisphere sources.

As no satisfactory substitute for manganese in steel making is known, curtailment of shipments from countries abroad would require greatly increased production from domestic and nearby sources. Federal legislation has been enacted providing that $2,000,000 may be made available for building pilot plants to beneficiate domestic ores. In addition, the Reconstruction Finance Commission has been authorized to make loans to producers of strategic and critical materials. It is estimated that present manganese stocks would last somewhat more than a year at the current steel production rate.

Mercury

CHARLES S. WEHRLY
Merchants Chemical Co.

NORMAL consumption of mercury in this country ranges between 26,000 and 28,000 flasks per annum; the normal production between 16,000 and 18,000 flasks. These figures apply to recent consumption and production rates, as prior to 1921 this country was an exporting nation.

The average tenor of treated ore in the United States during the past ten years has been less than 0.5%. The number of mines reporting production has lately varied from 90 to over 100. Reserves are estimated at from 140,000 to over 200,000 flasks from operating mines and known deposits.

Consumption aside from extraordinary demands due to war activities is relatively static, decreasing in chemical applications and increasing in the electrical and mechanical fields.

Price plays but little effect on consumption as in over three-quarters of the present consuming industries no substitutes are considered satisfactory. Obviously no correct estimate as to increased demand due to military requirements is possible as such increase depends upon unpredictable factors of extent and duration.

Since the tenor of ore in this country is low and since production must therefore follow price increases, output under the stimulus of war-time levels is likely to approach or even possibly exceed domestic consumption needs.

Pyrethrum

C. B. GNADINGER
Vice-President and General Manager
McLaughlin Gormley King Co.

SUPPLIES of pyrethrum have been easily obtained up to the present time from Japan and Kenya. There is no domestic source of supply. Small quantities have been obtained from Brazil and Peru. There are ample stocks in Kenya and Japan for the coming year.

There are numerous substitutes for pyrethrum but none of these has all the desirable properties of pyrethrins and none is capable of replacing pyrethrum, on an equal cost basis.

There has been increased production in Japan and Kenya during the past year. Sporadic efforts are being made to grow pyrethrum in this country.

Tin

American Iron & Steel Inst.

AMERICAN producers of tin plate do not share the fears recently voiced in some circles that this country faces the possibility of a shortage in tin which might cause curtailment of tin plate consumption and force the use of substitutes, according to the American Iron and Steel Institute.

While no definite figures are available on aggregate stocks of tin held by members of the tin plate industry or in transit to them, leading producers are confident that the situation is comfortable. They foresee no important disturbing developments in the outlook.

That is the prevailing view despite recent events in the Far East which have cast a shadow over the future control of the Netherlands East Indies and French Indo-China. Both of these possessions have rich tin ore deposits and they supply the United States with a substantial part of its tin.

The opinion is common that even if those colonial possessions were to pass out of the control of the empires to which they now belong, the new rulers would be no less eager to sell tin. It is one of the most valuable metals of the world and gives any country controlling supplies of it an important foreign trade asset. The United States as a great market for tin is not likely to be overlooked by those who have it to sell.

CHEMICAL PROCESSING
In the Production of Furs

Fine Furs Pass through Many Processes Involving the Use of Basic Chemicals and Dyes before They Can Adorn Milady. Various Steps in Their Production, As Well As the Chemicals Employed Therein, Are Discussed by Dr. Charles F. Mason.

THIS is not an attempt to describe in detail all the detailed points of an old, old industry, which as a branch of leather production, has been practiced with gradually improving results for about four thousand years, but rather is intended to be only a resume of the industry's present status with respect to the chemicals used. Those not engaged in the multifarious roles of the fur trade give little or no thought to how many skilled artisans play their respective roles in making a finished fur ready for sale.

Few consider, that the beauty of the garment depends upon farming or trapping, curing, dressing, tanning, dyeing, finishing, and storage as well as climate, food, age and season in which the hide or pelt is first obtained. It was always a highly secretive industry until the turn of the century, when scientific men attempted to solve some of the problems, especially dyeing. Emergence from the status of a cloistered trade has been proceeding steadily, especially in the larger establishments, where technical men are employed under the title of chemist.

Their duties were more for the purpose of introducing labor saving methods and devices than to investigate the many chemical changes involved, but reports upon the more fundamental problems have been published in recent years. A technical man must possess a strange background of biology, chemistry, physics and engineering to possess a true insight into the operations. Fortunately such men have been available.

Large furs like those of bears and seals are salted and kept moist during shipping but those of smaller animals, called pelts are stretched and dried at moderate heat; the purpose in both cases being to arrest the process of decay until they reach the finisher. This process is also called curing. Because furs are usually shipped from the forest or farm in cold weather, the process of decay is further checked.

Upon arrival at the fur-dresser's plant they are soaked for a few hours in various solutions, which the operator has found by trial and error to be satisfactory for his particular goods. Two such soaking solutions are:—

1.	Borax	0.25
	Water	99.75
2.	Formic acid	0.12
	Water	99.75

Upon removal they are placed, without washing, in a tramping machine with moist sawdust, where the softening operation is accelerated by mild mechanical action. This is followed by washing with fresh water and finally centrifuging to remove excess water before residual flesh is removed before tanning.

Large skins, which have been salted for shipment are given a different treatment. That of a bear is rubbed by hand with oil before the tramping operation, where bran is sometimes used in place of sawdust; seal skin is soaked in caustic soda solution to which chalk, talc or a white earth have been added; then in a dilute solution of calcium chloride overnight, followed by washing in dilute lactic or formic acid. At this point the fur and leather industries divide; in the former, the tanning operation must be chosen and conducted in such a manner as to avoid injury to the hair while in the latter the hair is removed and in some cases sold to the felt industry.

Tanning operations can be divided into six classes.

1. Salt-acid tan
2. Mineral tan
   a. Alum
   b. Chrome
   c. Iron
3. Chamois tan
4. Formaldehyde tan
5. Combination tan
6. Vegetable tan

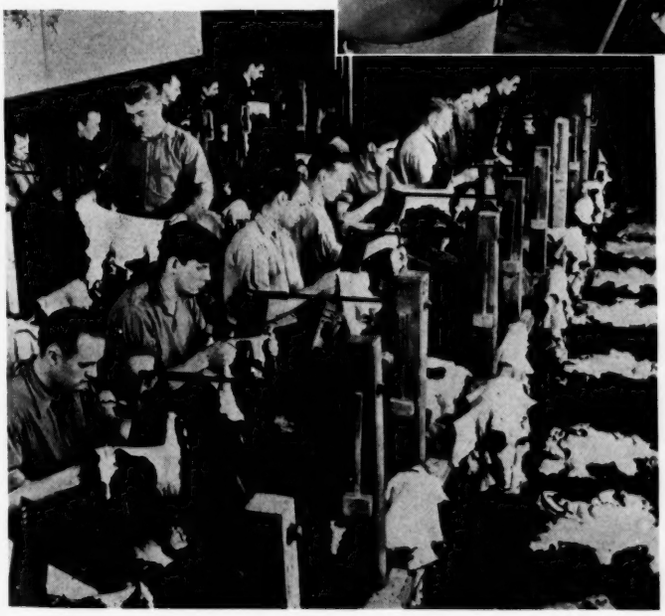
Formulae of different tanning solutions are legion; hence only a few will be reported. Differences of opinion are centered more in the effects of certain tanning solutions upon certain skins than upon different concentrations and the superiority of one acid over another.

Salt	10.00 parts
Sulfuric or formic acid	0.40
Water	89.60

This is a salt acid tan and is usually brushed upon the back of the skin, but if the hair is not damaged, soaking for 12 to 20 hours can be practiced. The brushing operation must be repeated many times because the tanning solution must be allowed to penetrate through from one side only. Included in this class are the older fermentation processes where lactic acid formed from the fermenting of bran, or flour in the presence of salt takes the place of the acids mentioned above.

Water	94.06 parts
Salt	1.70
Alum	4.24

This is one of the mineral tans and was perhaps in use long before acids were for sale in the forms and varieties available today. It differs slightly from the salt acid tan in that acid is present from the alum after its solution in the water. Soaking in this solution results in uneven dyeing for some furs and as a substitute the one below is brushed on; the skins are piled up, and the operation continued until tanning is complete.



Various stages in preparation of furs for dyeing are shown in this group of photographs. View at top shows a man washing furs, to eliminate every trace of dust, dirt or grime. In center, girls are working oils into the "leather" to give each pelt long-lasting pliancy and suppleness. At bottom, skins are being "pulled" to open the pores, so dye will penetrate for color firmness.

(All photographs published with this article furnished through courtesy of A. Hollander & Son, Inc., New York.)

Alum	5 parts
Salt	4
Flour	5
Water	86

The chrome and iron tans are little used in the fur industry because undesirable coloring effects and too great a toughening action are obtained.

The chamois tan is one of the oldest methods used and involves excessive hand labor. A description of the operations is outside the scope of this report, but the materials used were seal oil and alkali obtained from wood ashes. Today animal, vegetable and mineral oils are used with sodium carbonate for the subsequent washing. Although drying oils seem to be the most logical ones for this operation, the following have been reported. Train oil, egg-yolk, glycerine, neat's-foot, sulfonated neat's-foot, sulfonated castor, cotton-seed, olive and mineral oil or petroleum residues.

The formaldehyde tan is seldom used by itself but in conjunction with any of the other tanning reagents. It is well known that this reagent will stiffen any animal membrane, with which it comes into contact but a wrinkling will follow and hence its use is restricted to being an assistant to others. Being sold in the form of a forty per cent. water white solution it serves well with mineral or salt acid tanning solutions, where undesirable coloring effects are to be avoided.

The combination tans are self-descriptive and the vegetable tans comprise the tannins, which are obtained from the bark of trees and shrubs. They are sold today in the form of extracts, which differ widely in composition and are used in the leather industry. However, few uses are found in the fur dressing plants, unless it is desired to obtain or impart the color of the tannin extract to the fur itself.

Drying and Finishing

When the tanning operation is completed the furs are washed in fresh water and dried in a room, equipped with a forced draft at 25 to 30° C. for varying periods, after which they are stretched, combed and beaten to soften the underlying skin, which is now leather. In some cases they are cleaned in a motor driven rotary drum to which sawdust, talc, or a white

mild abrasive is added for removal of scales still clinging to the hair and leather. Shearing and clipping of the longer hairs is usually done at this point before mordanting and dyeing is attempted.

Killing

Usually furs do not absorb dyes evenly without a pretreatment of volatile solvent or alkali to remove the natural or added oils, which are in each hair. Solvents like alcohol, ether or benzine are applied to the surface by hand or oxidizing chemicals are applied. Some of these are hydrogen peroxide, hypochlorites, permanganates, perborates and nitrates. In case the hair can stand dipping the formulae below are often found satisfactory.

1.	Sodium carbonate	1 parts
	Water	99
2.	Acetic acid	1 parts
	Water	99

At a temperature of 25 to 30° C. the skins are immersed for two hours in number one and then for an equal interval of time in number two.

Mordanting

Although this is not always necessary with all kinds of furs mordanting chemicals are usually available in the average fur dressing plant and due to their reluctance to change those now in use are out of date in the light of modern chemical advances. The object is to deposit upon and inside the membrane insoluble oxides or hydroxides to which dyes are adsorbed and held fast.

1.	Iron Mordant	
	Ferrous sulfate	25 parts
	Water	65
	Glycerine	5
	Ammonia 20%	5

Pelts are subjected to second stretching to increase their suppleness.

The ammonia is the last reagent added and if done so slowly with rapid stirring the precipitate will be finely divided or colloidal due to the protective colloidal effect of the glycerine present.

2.	Alkaline Mordant	
	Aluminum sulfate	12 parts
	Potassium Alum	18
	Water	30
	Lead Acetate	22
	Water	18

The first three components are mixed and heated until solution is complete; likewise the last two are given the same treatment in a separate container. They are then mixed and diluted with 600 parts of water. Solid and colloidal aluminum hydroxide will be present in suspension and can be brushed on.

The alkaline and chromium mordants are not so popular and are passing from the picture.

In the dyeing operation the skill of the operator is indispensable especially with furs for coats where muskrat, rabbit and otter are to be made to resemble seal, muskrat to resemble mink, rabbit to resemble beaver and many others. One would expect, that in this age of synthetic dyestuffs, they alone would be used exclusively but such is not the case. Indeed there has been much patent activity in the past decade upon synthetic fur dyes made from coal tar intermediates but mineral, direct and mordant ones have not been displaced.

The Place of the Mineral Colors

Soluble salts of iron, lead, manganese, copper, cobalt or nickel are dissolved in water and the solution is brushed over the hairs. After repeated applications followed by drying in the air colors are produced and are attributed to either oxidation or insoluble compounds formed by combination of the metal with the sulfur of the membrane. Potassium permanganate turns brown upon furs as it does when brought into contact with any animal substance. One example of a double decomposition is listed below and the application of two solutions lessens the time for the desired shades to develop.

1.	Lead acetate	6 parts
	Water	94
2.	Ammonium sulfide	5 parts
	Water	95

Solution number one is brushed on and after drying solution number two is applied. In case the tips of the hairs are to have a lighter shade, hydrogen peroxide or hydrochloric acid will destroy the color of lead sulfide and give the desired result.

Vegetable colors comprise the tannins and dyewoods between which there is no sharp line or demarcation. However, a few examples of each class are listed below and classified as in the trade.

Tannins	Dyewoods
Gall nuts	Cutch (Catechu)
Sumac	Logwood
Chestnut extract	Brazil wood
	Turmeric

Their use depends entirely upon the skill of the operator for production of colors fast to light and moisture. As in the production of inks an iron salt can be applied after the application of the tannin or dyewood and a dark shade can be obtained. The formula listed below is an example of a combined dye and mordant.

1.	Ferrous sulfate	8 parts
	Alum (Potassium)	8
	Verdigris	8
	Gall nuts	64
	Logwood Extract (Sp. G. 1.07)	118
	Water	794

Aniline black is applied to the hairs by brush and after an interval of time to allow for penetration an oxidizing chemical

One of many inspections furs pass through before they are accepted as fit for milady's wearing apparel.

Persian lamb processed at Hollander, New York, plant, is so supple an entire pelt can be drawn through a small ring.

is applied to obtain a dark fast insoluble color, the composition of which is still a question of science. The oxidizing materials are manganese dioxide, hydrogen peroxide, chloric acid, or any others too numerous to mention. The formula below contains the oxidizing chemical in each application with other chemicals, which are considered to be catalysts or accelerators.

1.	Aniline hydrochloride	1632 parts
	Sodium chlorate	250
	Copper sulfate	116
	Ammonium vanadate	2
	Water	8000
2.	Ammonium dichromate	23 parts
	Water	77

A more modern one, where two applications are necessary is:

3.	Paraphenylenediamine	2 parts
	Sodium hydroxide	1
	Water	97

This is applied by brush and after drying partially, hydrogen peroxide is applied.

Bleaching Operations

Some white furs are tanned and finished without dyeing. To produce a still whiter finish they are degreased and bleached either by contact with a gas in a closed room or by dipping. Moist skins are hung in a chamber and sulfur dioxide is applied either by burning sulfur or by decomposing sulfites with acids. Liquid sulfur dioxide now sold in steel cylinders is also widely used. Where dipping is practiced, three per cent. solution of hydrogen peroxide neutralized with ammonia is one of the mildest and safest reagents.

More active bleaches are one-tenth per cent. solutions of potassium permanganate in water followed by dipping in two to three per cent. solutions of sulfurous acid. The formula below is intended for bleaching, degreasing and deposition of a white solid upon the surface.

1.	Sodium peroxide	27 parts
	Sulfuric acid (1%)	36
	Sodium silicate (1.45)	37

The fur is dipped into this solution and allowed to remain only until all portions are wet; it is then removed and washed thoroughly in a two to three per cent. solution of sulfurous acid.

Moth-Proofing Practices

The ladies are very careful to store their furs during the summer months and the cold storage is the principal selling point, but cleaning and the application of insecticides are equally important. So far the solids used are naphthalene or paradichlorbenzene; the liquids are dichlorethylene or this one mixed with carbon tetrachloride, and the vapors or gases are ethylene oxide or any of the liquids injected under reduced pressure. The principal progress in this line is in equipment for applying the lethal doses rather than in finding new and better insecticides.

From this hasty perusal of a broad field one can easily see that the furrier's task is closely allied to chemical problems and in the near future we can look for as many startling advances in the furrier's art as has been attained in tanning of leather. Strange to relate that as fundamental knowledge upon the structure and behaviour of animal tissue accumulates the number of chemicals used by furriers increases and although merchants in certain districts specialize in materials for this trade only there is an opportunity for sale by dealers in all lines of chemicals.

Washington

Russell Kent

ANTAGONISM to business and industry is an outstanding development of the last month of Congressional sessions. So pronounced is this tendency in legislative circles that the usual situation of the last several years has been reversed and now it is the Executive branch of the federal government which is found defending business against the assaults and criticisms of the Legislative branch.

Politics undoubtedly has something to do with this change. Most candidates for public office consider capital as in the minority when reduced to terms of individual voters. At a time when conscription of manpower for military purposes is the foremost topic of paramount interest to the masses of people, "conscription of wealth" naturally has a popular political appeal.

Russell Kent

Those who are realistic about the success of the defense program realize that in a republic the profit motive is necessary to stimulation of enterprise. The executive branch of the federal government has not been realistic in all phases of the approach to the rearmament program, but President Roosevelt and his cabinet members and other advisers on defense projects are sufficiently practical to realize that there must be at least a reasonable return upon capital investment and the skill of management if the maximum effort in production is to be attained.

There have been repeated conflicts in public announcements of the progress of the defense program. It is probably true that some of these conflicts may be attributed to differences in terminology. But the fact appears to be that with bills appropriated, the public expectation has been led to fantastic lengths regarding the time element when money will be translated into munitions and implements of war. Thus, "on hand and on order" is a phrase which means a dozen different things to a dozen different individuals. There has been a lack of frankness in presenting the preparedness picture to the public on the part of some of those whose utterances are given greatest weight. This considerably less than candid presentation to the people of this country cannot be said to deceive any foreign power for the recent facts are too well known to those whose business it is to learn for them to be deceived as to present conditions.

The upheaval regarding requisition or condemnation of factories producing defense essentials and the drive for compulsory acceptance of order and priorities are the result of the action of a very few manufacturers. Congress in taking sudden action in June to reduce the profit limitations on airplanes and naval ships—action taken against the urgent advice of Army and Navy officers and members of the National Defense Advisory Commission—precipitated a situation where some sub-contractors, only part of whose production would be affected by government orders, lost interest in having government business. The consequence was that contracts for a large number of Army and Navy airplanes were held up for weeks and the Navy found it difficult to obtain some of the materials for its vast ship building program.

The result was that Congress, and particularly the Senate, became outraged and laid a charge of lack of patriotism against all business and industry, although by far the larger element of business and industry did not participate in any dilatory tactics. To illustrate how far such feeling could extend, it is only necessary to mention that in considering the conscription bill the Senate adopted the Russell-Overton amendment, which would have permitted condemnation of private plants, by the overwhelming vote of 69 to 16.

It is to be understood that in building Navy ships, from forty to sixty per cent. of the materials are acquired through sub-contractors. In the case of Army and Navy airplanes, approximately half of the body and half of the engine are secured by sub-contracts. The half of an airplane engine obtained by sub-contracts may be distributed among forty or fifty different manufacturers, each producing a small but essential part. Thus, a gear manufacturer may be called upon to accept a sub-contract for an airplane which would occupy, say, ten per cent. of his plant, while the other ninety per cent. was fully occupied with orders from private industry, and he could employ one hundred per cent. in similar orders. There would be a profit limitation on the government contract and none on the private contracts. Also, British war orders, which the administration has encouraged, have been large, and without profit limitations.

Of course, the excess profits tax removes the necessity for a profit limitation upon specific types of government contracts. But before this legislation came along, great injury to business and industry generally had been done by lack of interest on the part of a comparatively few manufacturers.

Thus, Congress assumed a punitive attitude and it was found that the President and the members of the National Defense Advisory Commission and the Secretary of War and the Secretary of Navy were in the attitude of defending private enterprise by emphasizing that business generally was fully cooperative.

Wendell L. Willkie, Republican nominee for President, also took up the cudgels in behalf of private enterprise so that no political issue was raised between the candidates for the high office of Chief Executive.

The tax bill created little controversy when it went through the House in a single day, simply because no opportunity was given for controversy. The rule under which the measure was considered was one of the most stringent that has been proposed in several years. It waived all points of order and permitted no amendments to be offered other than those proposed by the Ways and Means Committee itself, and it afforded only three hours of general debate including the hour on the adoption of the rule.

But the measure found plenty of controversy in the Senate. In the first place, it emerged from the House Ways and Means Committee in far different form from the outline which had been made public by the Tax Subcommittee and in this form it veered strongly toward the original suggestions which had been made by the Treasury Department that there be a single basis for excess profits determination, invested capital. True, there was an alternative in the bill by which taxpayers might elect to choose an average earnings basis, but the penalties, were this course adopted, were severe—an increase of 4.1 in the normal corporation income tax rate, which thus would be brought to 25 per cent. for corporations with net incomes of more than $25,000, plus higher rates on excess profits than would be applied to those electing to stand on the invested capital basis.

It was inevitable that a war-profits tax bill appear in the offing and the Ways and Means Committee itself made provision for such a measure to become effective only in the event of actual war, by obscure

(*Continued on page 304*)

WE ARE READY

TO DO OUR PART

The American chemical industry is mobilized for defense and demands of the equipment manufacturer a special effort to satisfy its requirements.

We're ready. With three large plants available for the manufacture of ceramic equipment for the chemical industry, General Ceramics Company has unequalled facilities for meeting this challenge.

Large stocks of standard equipment are on hand for prompt shipment, and expert engineering service is promptly available for the discussion of special problems in the manufacture and handling of corrosive chemical products.

GENERAL CERAMICS COMPANY

MAIN OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

BUFFALO: 306 Jackson Bldg.
CHICAGO: 208 South LaSalle St.
LOS ANGELES: 415 South Central Ave.
PORTLAND: Railway Exchange Bldg.
MONTREAL: Canada Cement Bldg.
SAN FRANCISCO: 276 Monadnock Bldg.
SEATTLE: 1411 Fourth Avenue Bldg.
SPOKANE: 1823 South Maple St.
TACOMA: Tacoma Bldg.

GENERAL CERAMICS COMPANY
CHEMICAL STONEWARE

Why it pays to use GENERAL CERAMICS Chemical Stoneware

★ General Ceramics Chemical Stoneware is acid-proof through and through. Both the surface glaze and the body of the ware are completely impervious to all acids and other chemicals of an active nature, excepting only hydrofluoric acid and hot solutions of strong caustic alkalies.

★ General Ceramics Stoneware is a permanent installation. It does not deteriorate with age and will ordinarily outlast the building in which it is installed. It practically eliminates both maintenance and depreciation costs.

★ Because of its smoothly glazed surface, General Ceramics Chemicalware is as easy to keep clean as a china dish. High-grade stoneware vessels have no effect whatever upon their contents, nor have the contents any effect upon the stoneware. This makes it possible to obtain laboratory results, with chemical stoneware equipment, on a production basis.

★ The use of high-grade stoneware helps to insure against costly shut-downs due to leaky or defective chemical handling equipment; and it minimizes hazards to employees and property.

★ General Ceramics Stoneware costs less than many substitute "acid-resisting" materials which will withstand the action of some chemicals but are attacked by others.

★ It is available in a wide range of products, including tanks, pots, kettles, jugs, towers, pipe and fittings, laboratory sinks, and mechanical equipment, the latter including centrifugal and plunger pumps, acid elevators, agitators, ball and pebble mills, blowers, and exhausters.

★ Many different kinds of Stoneware are available, with wide variations as to grain structure, toughness, strength, density, and resistance to thermal and mechanical shock.

Who knows the ABC of chemicals and the P D Q of service?

In buying chemicals, perhaps you have experienced difficulties in obtaining *what you want—when you want it.* John A. Chew combines a thorough knowledge of the chemical market with the personal attention his compact organization can give his customers' every inquiry and order. The next time you are in the market for any of the chemicals listed here, try John A. Chew and see for yourself what "Highly Personalized Service" really means.

CALL CHEW FOR THESE CHEMICALS

Acid Phosphoric
Acid Muriatic
Acid Sulphuric
Acid Nitric
Acid Oxalic
Acid Boric
Aluminum Hydrate
Barium Chloride
Bleaching Powder
Borax
Calcium Chloride
Carbon Bisulphide
Carbon Tetrachloride
Chlorine
Caustic Potash
Caustic Soda
Glauber's Salt
Paradichlorobenzene
Pine Oil
Potash Carbonate
Soda Ash
Soda Metasilicate
Sodium Phosphate (Mono-Di-Tri)
Sodium Sulphate Anhydrous
Sodium Tetra Pyrophosphate
Sulphur Chloride

JOHN A. CHEW
INCORPORATED
60 EAST 42nd ST., NEW YORK, TELEPHONE MURRAY HILL 2-1109

"Headliners" In the News

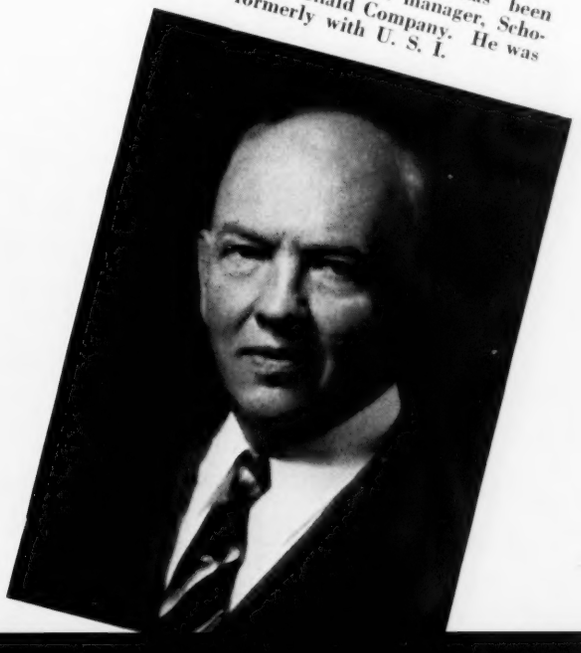
Right—Reginald M. Banks has been appointed assistant to William B. Bell, president of American Cyanamid. His new function will be to promote the coordination of research and sales activities.

Left—Charles H. Slater has been named Division Sales Manager in charge of Fine Chemicals for J. T. Baker Chemical Company. He will make his headquarters at Phillipsburg, N. J., after Sept. 1.

Right—Harold W. Feuchter has been named manager of J. T. Baker Chemical Company's New York office, succeeding Mr. Slater. Mr. Feuchter formerly contacted Baker accounts in upper New York State.

Dr. Robert E. Wean of Purdue staff has joined Agricultural Research Division of Stauffer Chemical Company.

Harold W. Haines has been appointed sales manager, Schofield-Donald Company. He was formerly with U. S. I.



Right—T. S. Nichols, vice-president, Prior Chemical Corp., has been elected a director of Great Lakes Chemical Corp., Filer City, Mich. Prior is sole selling agent for the company.

Quality Standards

RECOGNIZED quality standards, such as "sterling" on silver, are stamps of universal acceptance. In the Chemical Field an inexpensive assurance of quality can be secured by using NUCHAR Activated Carbon.

NUCHAR economically removes objectionable color, odor and taste which adversely affect the achievement and maintenance of highest quality standards in chemical products. NUCHAR, the Modern Purifier, actually removes impurities from solution by adsorption.

Use NUCHAR Activated Carbon to attain the highest quality standard for your product. It is adaptable for use in conjunction with other purification methods, enabling manufacturers to improve existing standards, frequently at a reduced operating cost.

NUCHAR

INDUSTRIAL CHEMICAL SALES

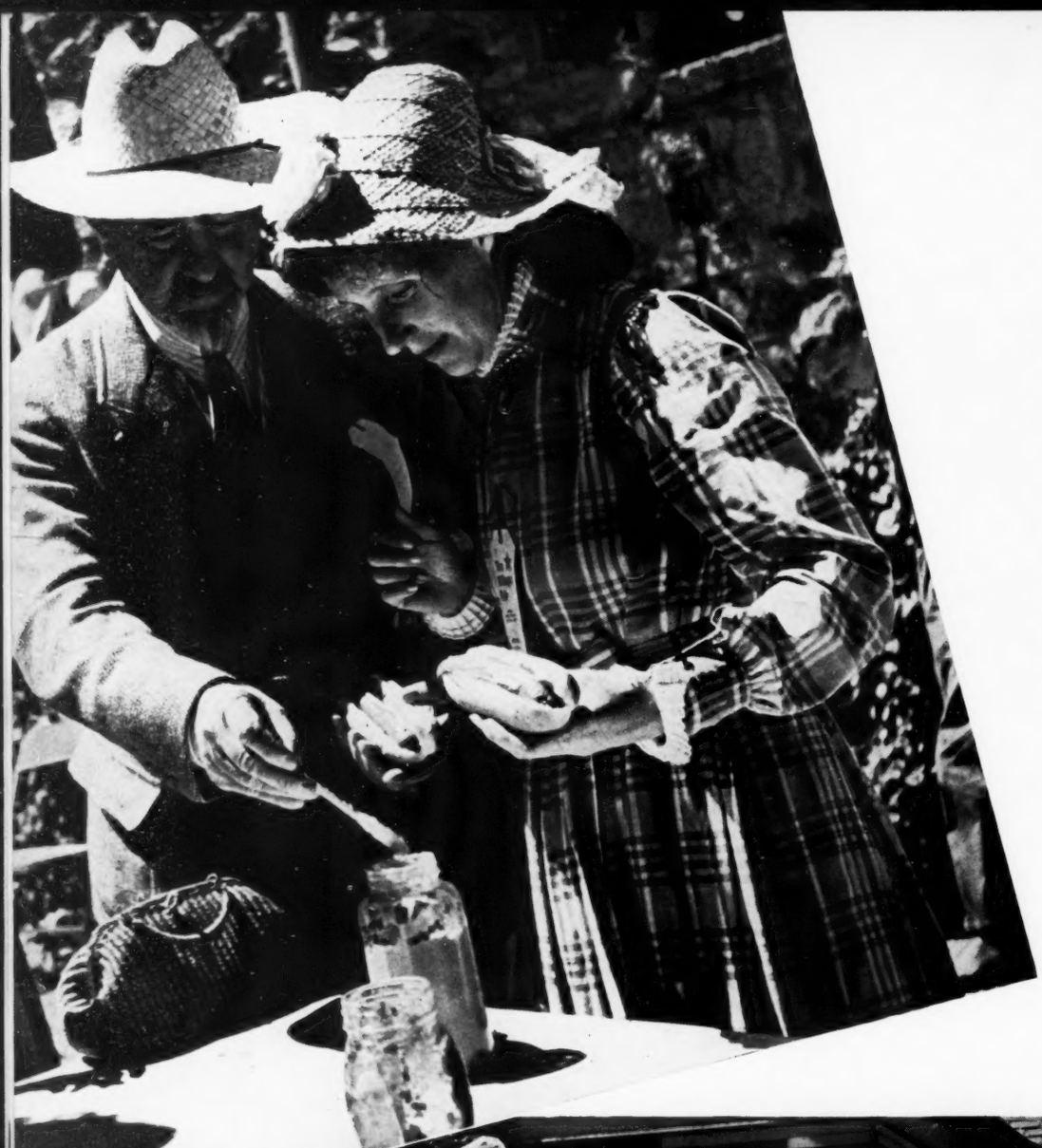
DIVISION WEST VIRGINIA PULP AND PAPER COMPANY

NEW YORK	CHICAGO	PHILADELPHIA	CLEVELAND
230 Park Avenue	35 E. Wacker Drive	748 Public Ledger Bldg.	417 Schofield Bldg.

Latest streamliner of the Kansas City Southern-Louisiana & Arkansas Lines is built of aluminum and aluminum alloys. On left, workmen are lowering vestibule and assembly into position on one of the cars. It is fabricated from strong aluminum alloys. Below is view of streamliner after it had been completed and christened "Southern Belle."

Ready to split the uranium atom and release its 200,000,000 electron volts of energy is this apparatus designed by Dr. E. U. Condon (left), associate director of Westinghouse Research Laboratories. Dr. William E. Shoupp, research engineer, holds mixture providing source of slow neutrons or electric bullets.

When A. F. Curran, chemist and director of Curran Chemical Corp., takes a business trip, he flies his own fast, radial engine powered Monocoupe. Below, he is shown just after a "happy landing."



"Dorr Village"

A Village Fair for the British-American Ambulance Corps, was held recently at Westport Mill, research laboratory of The Dorr Company, Inc. Mrs. John Van Nostrand Dorr was chairman of the Executive Committee, and Dr. Dorr loaned the grounds for the occasion. On the left Dr. and Mrs. Dorr sample the All-American Picnic Delicacy, while atmosphere of the occasion is shown below. Funds sufficient for three ambulances were obtained, as well as $500 for medical supplies.

You Can "SEE" the Crystal Clear Solution in These Typical Analyses of

VICTOR AMMONIUM PHOSPHATES

VICTOR
Chemicals

Phosphoric Acid
Pyrophosphoric Acid
Polyphosphoric Acid
Metaphosphoric Acid
Phosphorus
Phosphoric Anhydride
Phosphorous Acid
Alkyl Acid Orthophosphates
Ammonium Hexaphosphate Dinitride
Ammonium Phosphates
Alkyl Ammonium Phosphates
Fireproofing Compounds
Calcium Phosphates
Magnesium Phosphates
Potassium Phosphates
Sodium Phosphates
Sodium Pyrophosphates
Potassium Pyrophosphate
Sodium Metaphosphate
Alkyl Acid Pyrophosphates
Formic Acid
Aluminum Formate
Nickel Formate
Sodium Formate
Sodium Boroformate
Oxalic Acid
Calcium Oxalate
Sodium Oxalate
Magnesium Sulphate
Sodium Aluminum Sulphate
Ferrophosphorus
Triple Superphosphate

Send for descriptive catalog

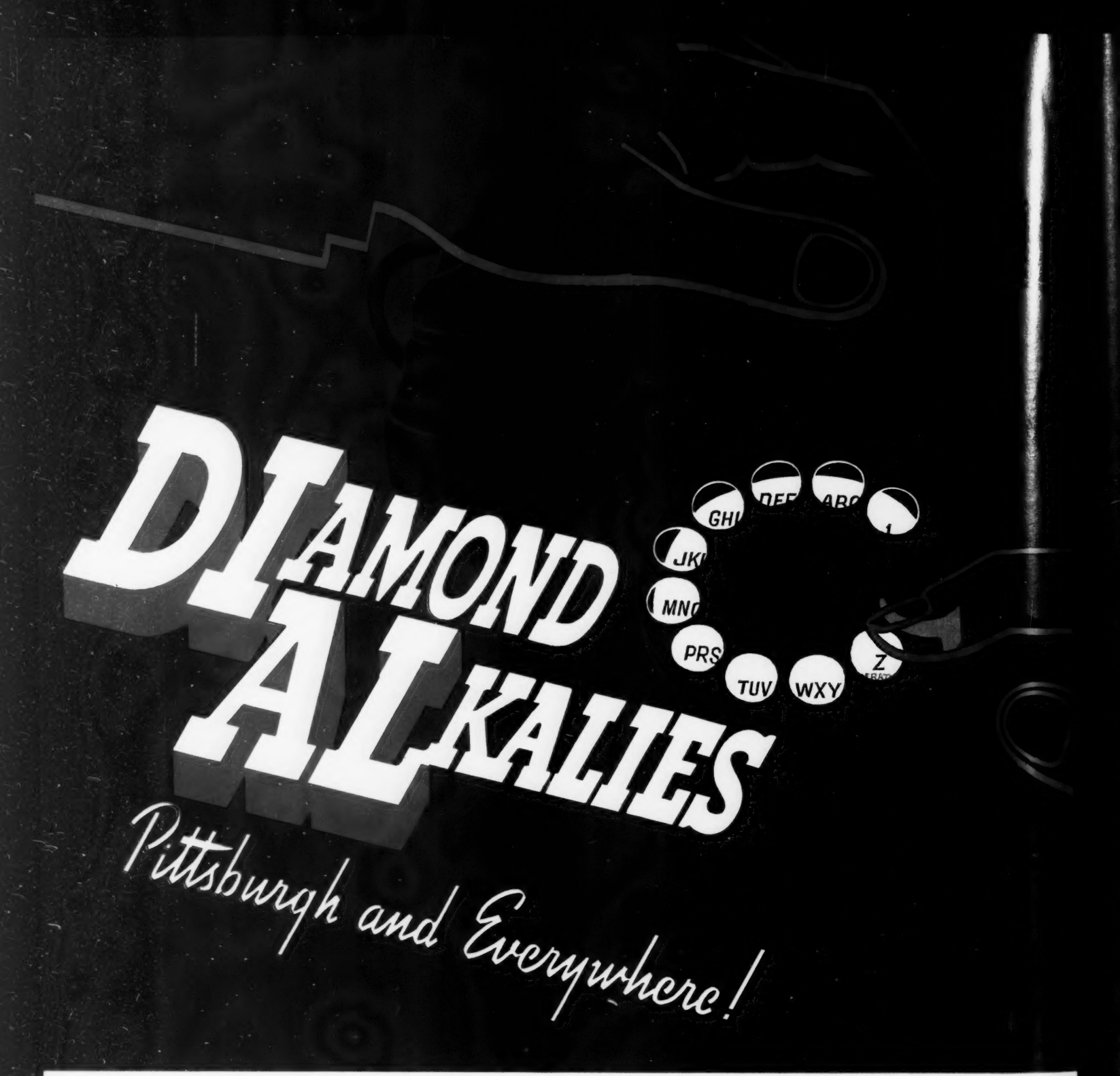
AMMONIUM phosphate has long been recognized as one of the most effective fire-proofing materials available. It is widely used in the treatment of lumber, fabric and paper. Since insoluble particles tend to clog microscopic wood and fibre pores and thus retard penetration, a pure product producing a crystal clear solution is essential. How well VICTOR AMMONIUM PHOSPHATES meet these requirements is seen in the following typical analyses:

	Mono	*Di*
Phosphoric Anhydride (P_2O_5)	61.40	53.80
Ammonia (NH_3)	14.80	25.28
Sulphuric Anhydride (SO_3)	0.04	0.04
Chlorides (C1)	nil	nil
Iron and Aluminum Phosphates ($FeA1PO_4$)	0.005	0.005
Water insoluble	trace	trace
Lead (Pb) parts per million	0.3	0.3
Arsenic (As_2O_3) parts per million	0.2	0.2
Fluorine (F) parts per million	0.8	0.8

VICTOR CHEMICAL WORKS
141 W. Jackson Blvd., Chicago, Ill.

VICTOR

pH HEADQUARTERS FOR OSPHATES



As near as your phone

The word "DIAL"—symbolizing DIamond ALkalies—serves to remind you that these uniformly pure products are always as near as your phone. Warehouse stocks of DIamond ALkalies are carried by well established distributors in all important industrial centers to meet emergency calls, or for LCL quantities.

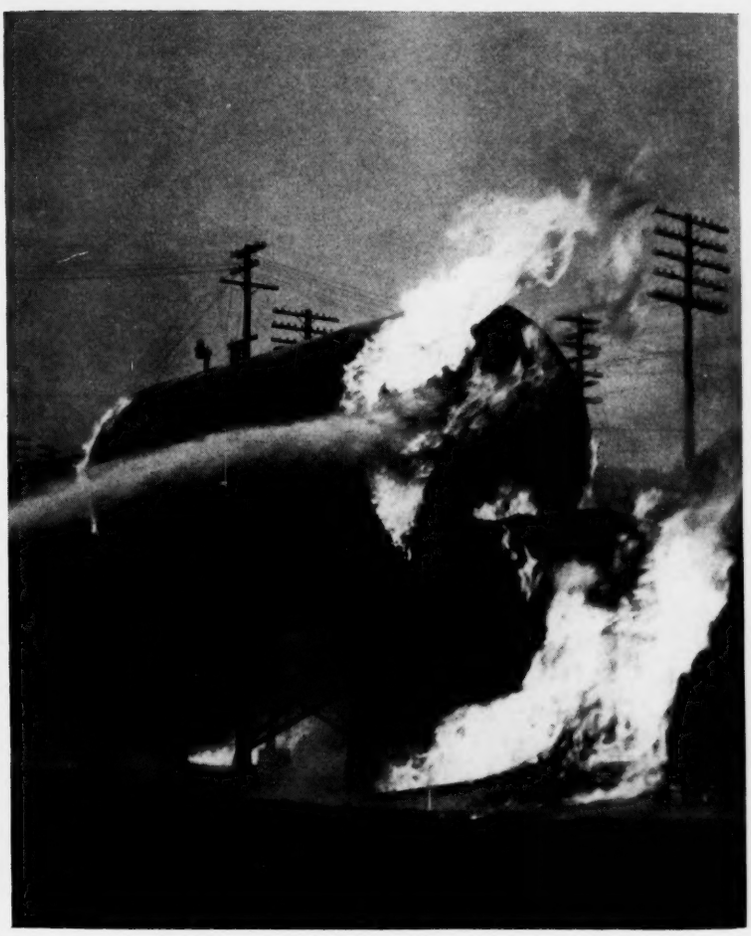
Thus, when you specify "DIAMOND", you get alkalies of the highest quality, plus a warehouse and delivery service that extends to your very doorstep!

ALKALI

DIAMOND ALKALI COMPANY

Pittsburgh, Pa., and Everywhere

PLANT OPERATION AND MANAGEMENT



Fighting Blaze From Leaking Naphtha Tank

Fire Prevention Week is being observed nationally during October. This gives CHEMICAL INDUSTRIES' editors the opportunity to present a series on fire prevention and fire fighting in chemical plants. Photograph shows result when vapors from jet of naphtha from leaking tank became ignited by an arc when switch at nearby pump house was thrown.

A DIGEST OF NEW METHODS AND EQUIPMENT FOR CHEMICAL MAKERS

CHEMICAL INDUSTRIES

FIRE PREVENTION
In Chemical Plants

In spite of fire prevention, the human element and occasional mechanical failure will continue to cause fires. Hence fire protection is just as important as fire prevention, and adequate means for prompt extinguishment of fires are essential.

For fires beyond the incipient stage, most plants provide sprinklers and hydrants, though in some cases specialized protection devices are required. In all plants, the highly important first line of defense against fire should be formed by supplying an adequate number of hand fire extinguishers of the type and size suited to each hazard and by training the workers in the use of these extinguishers. This line of defense ensures quick action by men on the spot while the fire is still small, and should be effective in extinguishing most fires with low losses and with the elimination of water damage to equipment, materials in process, and finished products.

Suitable types of extinguishers for practically all hazardous material used by industry are listed in the Factory Mutual Companies' Data Sheet entitled "Properties of Flammable Liquids, Gases, and Solids."

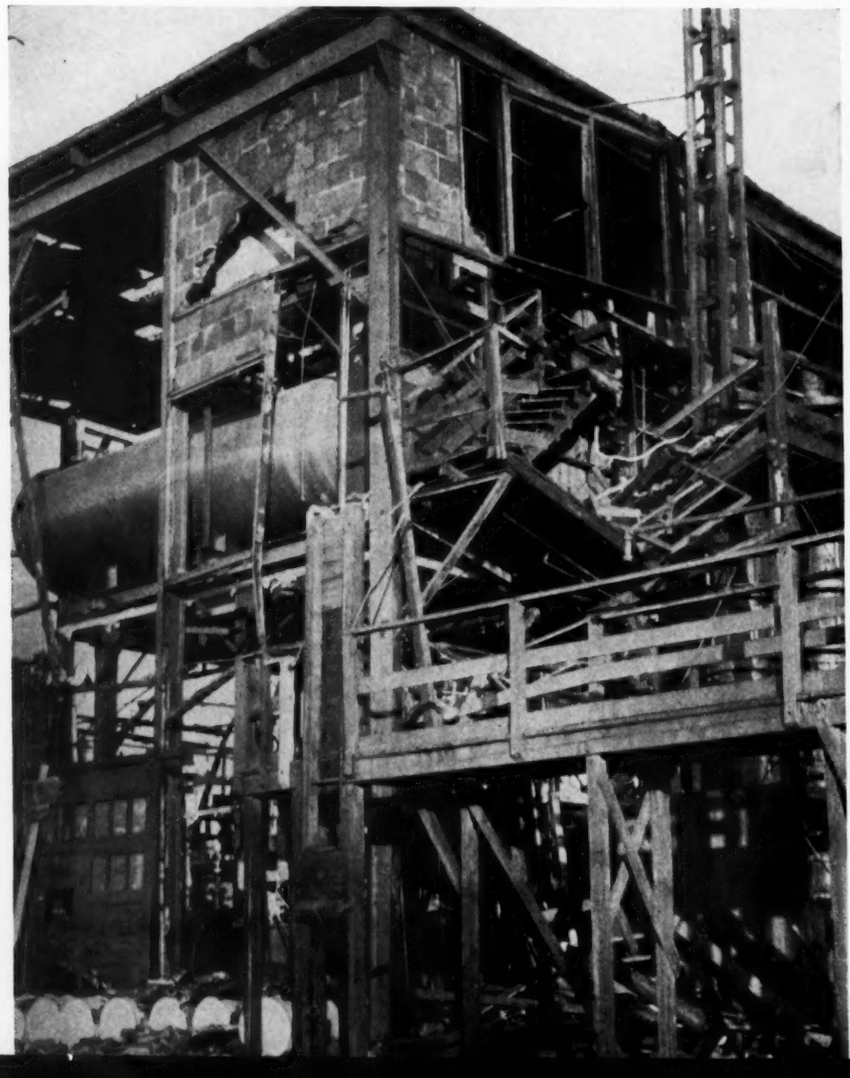
THE prevention of fire loss in the chemical industries is not so much a problem of the specialized hazards involving the handling and use of chemicals as it is a safeguarding of the more common hazards of the types found in all industries, and ordinary care in avoiding fires due to human carelessness.

Special hazards of chemicals such as metallic sodium, phosphorus, and others, are known to all students of high school chemistry. The use of such chemicals in industry is, therefore, generally well safeguarded. Other chemicals with similar but less well known hazards are also generally used with adequate safeguards. Therefore, no considerable improvement in the fire loss record of the chemical industry can be expected by paying more attention to the special hazards of well-known chemicals.

A real opportunity to improve the fire loss record does exist in connection with the development of new processes. Years of laboratory research and development may finally produce a marketable and needed compound. Too often such a process is transferred from a laboratory scale to full-scale production without sufficient knowledge of what is going to happen. The chemical engineer's work has not been completed, but the desire to reach the market first with a new product sways him against his better judgment. Occasionally such a process "runs away," destroying the equipment and causing serious and totally unexpected explosions and fires. The lesson is, of course, evident.

When this happens, the ensuing investigation usually reveals that the equipment lacked necessary emergency reliefs or adequate temperature controlling equipment and that the hazards of the process had not been fully investigated in advance. Close control of temperatures is often as necessary to prevent fire in chemical processes as it is to secure successful operation of those processes. Reliance on manual control under such conditions appears to be as unwise as it is unnecessary. Reliable thermostats, and temperature controlling and limiting equipment are available in a wide range of price and accuracy, and if more generally used will result in an appreciable reduction in chemical plant fires. The reliability and accuracy of control equipment can be retained through a proper maintenance program.

The use of flammable solvents in the chemical industry offers an even greater opportunity to prevent fire loss. Whoever coined the expression "Familiarity breeds contempt" might have been thinking of the way hazardous flammable liquids are handled and used in some chemical plants. It is not uncommon for a wall of safeguards to be thrown around the small-scale use of some slightly hazardous solvent while at the same time large quantities of an extremely hazardous solvent are used with a minimum of safeguards. Data are available which should enable the engineer, inexperienced in fire prevention, to provide adequate safe-



Escape of benzol from broken gauge glass resulted in this $20,000 explosion.

guards for the handling of any solvent. These data include the flash point, auto-ignition temperature, lower explosive limit, and explosive range. A convenient compilation of the essential information has been issued by the Factory Mutual Companies in a data sheet entitled "Properties of Flammable Liquids, Gases, and Solids."

Safeguards for flammable solvents should start with safe storage. The safest storage is in buried tanks outside. The proof of this is indicated by the excellent fire record of buried gasoline tanks at filling stations throughout the country.

Inside storage should be avoided if possible, but if necessary should be arranged as outlined herein. Tank supports that will not fail from short exposure to serious fires should be provided for inside tanks. Vents should be of adequate size to relieve internal pressures that may be unusually high due to exposure fires. Vent protection to prevent fire reaching the inside of a tank is of course necessary. Sir Humphrey Davy's lamp, invented in 1816, provides the basis for simple, inexpensive, and effective means for protecting tank vents. Double layers of 30 mesh, 30 wire screens between flanges at the end of a tank vent are effective flame arresters for vents of small diameters (4 inches or less). Commercial devices, although more expensive, are combined with low-pressure tank seals which reduce evaporation losses and are less likely to obstruction and therefore, despite their cost, appeal to the thrifty management. Consideration of the fact that fire may occur at the end of a tank vent leads to the conclusion that it should be located where it can do no harm, namely, outdoors and away from important structures. For less apparent but equally as good reasons vents for different tanks should not be manifolded. This requirement may be avoided with reasonable safety if a few very small tanks are involved and conditions are otherwise favorable. Storage tanks in addition to being safely located and adequately and safely vented should be vapor-tight except through the vent.

The transporting of flammable liquids from storage to point of use should also receive consideration. Experience indicates the preferable method is by direct pumping through safely located piping. Remote control of the pump at the point of delivery is essential. Emergency control should also be provided through master switches for pump motors and valves for solvent lines. These should be located outside areas where the occurrence of fire is most probable. Location of the piping buried in trenches outside of buildings is preferred. Inside piping should be well supported and guarded against physical injury. Piping should be adequately valved with a minimum of one valve at the point of supply and one at the point of discharge. Because of their ability to resist breakage under strain or shock, only malleable or steel fittings should be used. The need for expansion and swing joints should also be carefully considered in piping layouts.

By G. A. Shattuck

Chemical Engineer
Associated Factory Mutual Fire Insurance Companies

The use of air under pressure for transferring solvents is dangerous and should be avoided. Such transfer or "blowing" does not permit the instantaneous control of solvent flow that is so necessary in event of a broken pipe or fitting. Reference to tables will indicate that the vapor above gasoline is normally above the explosive range. Blowing will dilute these vapors and may produce an explosive mixture above the gasoline.

Solvent transport by inert gas under pressure is also undesirable due to lack of instantaneous control, and the elimination of the vapor-air mixture does not offset this weakness. It is possible, however, with careful engineering to provide well-valved lines, prompt venting of the gas, and supply of the gas at a predetermined low rate so that such a system can be reasonably safe. Solvent transport by water pressure can be safest of all as the vapor space is eliminated and the flow can be promptly controlled. The benefit of direct pumping of solvent should not be offset by unsafe handling at the point of use. A flexible metal-lined hose at the end of the discharge pipe can be arranged to reach a battery of churns, or other units of equipment. To distribute flammable solvent safely beyond the reach of such a hose would require the use of safety cans.

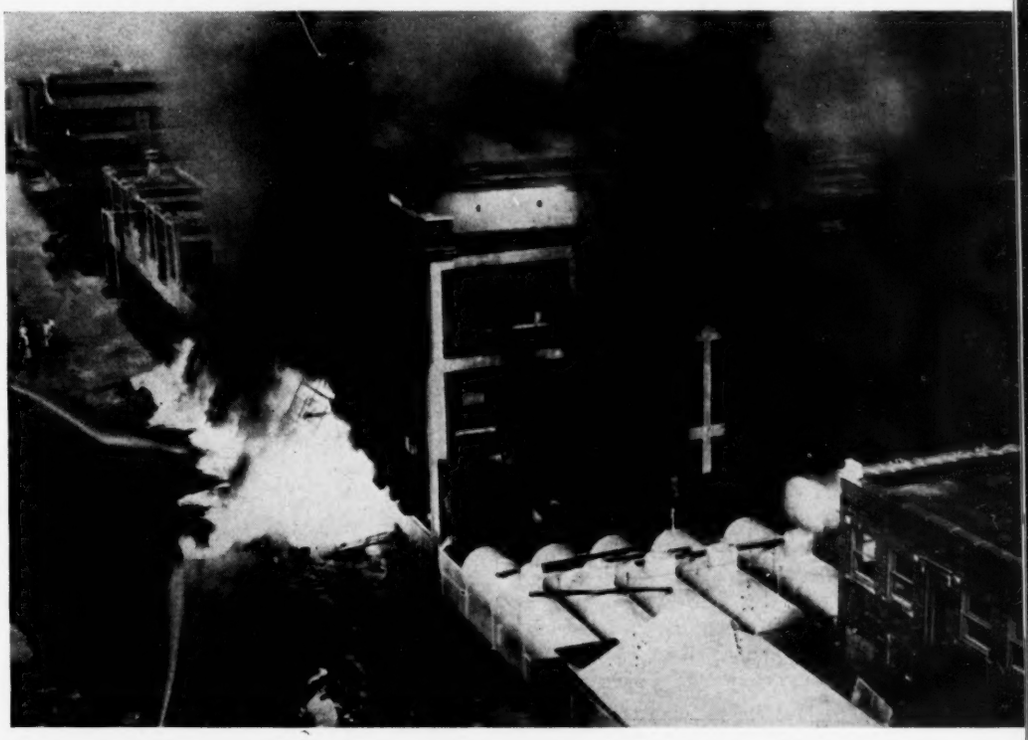
One of the most common causes of fires or explosions where flammable vapors are present is static electricity. Where flammable liquids must be poured, drained, or dipped from one container to another, make an electrical connection between the containers or connect them both to the same ground. Any electrical charges which develop are thus equalized between the two containers.

Inadequate maintenance, especially of electrical equipment, appears to be the cause of some fires in chemical plants. The remedy will include the employment of capable men and the requirement of permanent repairs. Makeshift repairs should be tolerated only during an emergency, and proper repairs should be made as soon as the emergency has passed.

Untrained and undisciplined personnel, although a basic cause of fire in many industries, fortunately does not appear to be much of a factor in the chemical industry. There are a few exceptions where labor turnover is high, the personnel irresponsible or undisciplined, and the foreman unqualified. The prevalence of fires in such plants is but the normal result of such conditions.

The conclusions which it is hoped the

This fire resulted from ignition of vapors released after charging a 1000-gallon mixer with nitrocellulose and lacquer solvents.



reader will have reached can be summed up as follows:

1. Arrange equipment and processes with due consideration of the known physical characteristics of the chemicals.
2. Investigate new processes carefully and completely so as to determine quantitatively as well as qualitatively how they can be controlled. Provide automatic controls as far as practical.
3. Store and handle solvents with due regard for their hazard as listed in available tables.
4. Maintain high standards of order and neatness throughout your factory.
5. Provide proper and adequate lubrication for moving equipment and maintenance for electrical equipment.
6. Employ intelligent help, instruct them carefully, provide able foremen, and maintain discipline.

Further consideration of the causes of fire loss in the chemical industry leads to the conclusion that the fundamental hazards of all industries, regardless of type, are important to this industry. These fundamentals include dirt, congestion, lubrication and maintenance deficiencies, and untrained or undisciplined personnel.

Dirt is the Trojan horse by which fire enters many industrial plants. To avoid this hazard, it is not necessary to keep a plant clean according to domestic standards. It is necessary, however, to remove accumulating waste and to keep raw, intermediate and finished materials segregated and in their proper places.

Congestion is another fundamental source of fire loss that is common to chemical plants. Congestion often produces that continuous path of combustibles that permits a fire to spread rapidly from its point of origin to areas where it may be controlled only with difficulty. Congestion also constitutes a mental hurdle for the operating personnel and leads to errors of judgment, some of which result in fire.

Lubrication may not appear to be much of a factor in chemical plants. Few, however, of the chemical industries produce by purely chemical processes. The mechanical processes of stirring, centrifuging, etc., necessitate adequate lubrication to prevent fire. One example may serve to emphasize this point. A recent fire in a chemical process was found to have started at a none too well lubricated high speed mixer. The bearing temperature of this mixer finally reached the ignition temperature of carbon disulfide used in the process and a fire resulted. Inadequate lubrication occasionally results from the use of improper lubricants. Such a condition need not exist if the excellent advice of the lubrication engineers, available on request, is followed.

NEW Processes and Products

Sulfatate

Because water colors will "creep" on the high polished surfaces of acetate sheets, accuracy of line and design are extremely difficult to obtain, under ordinary conditions. These difficulties are said to have been eliminated by the use of sulfatate, a new wetting agent.

Using a Sulfatate-Yumidol combination will not increase the viscosity, nor affect opacity and color intensity. The designs will not dry and crack off. The color can be scratched off with a blunt instrument for alteration or revision without destroying the surface or polish of the "cell."

Mercury Purification

A simple and interesting method for the purification of mercury used in laboratory work is suggested by Dobrowski (Chem. Z., 1940, p. 32). The mercury is mixed with a cold saturated solution of potassium permanganate and well shaken. This causes the permanganate to change to a greenish or brown color, manganese dioxide being formed which emulsifies the mercury. The mixture is then diluted with water and decanted, the mercury remaining being then treated with a fresh permanganate solution until its color remains unchanged for 30 seconds. The permanganate and manganese dioxide are removed by adding a little dilute nitric acid which dissolves the dioxide and allows the mercury to drop in normal liquid form to the bottom of the vessel. It can then be separated from the liquid used to wash it by means of a funnel with a cock, and any remnants of moisture in the mercury removed by running it over blotting paper. *The Chemical Age*—June 22, 1940.

Strong Water-Proof Adhesive

A new adhesive called "Strangl-Hold" has recently been put on the market. According to the makers this new adhesive has unusual properties, some of which are as follows: 150 lbs./sq. in. adhesion strength to metal, 180 lbs./sq. in. to glass, 210 lbs./sq. in. to wood, 500 lbs./sq. in. tensile strength, water-proof, remains plastic and does not dry out, withstands extreme changes in temperature, has good dielectric properties.

"Strangl-Hold" is usually troweled or spread over the parts to be joined or protected. The thickness of the coat is .010 of an inch and it dries to a black color. It is composed of two ingredients, a powder and a liquid, which are quite stable when unmixed, but should be used within an hour or two after mixing. "Strangl-Hold" is unaffected by many corrosives, but suffers some attack by rubber solvents and by copper and manganese in solution. It is said to be an excellent product as a base coat for paint, especially under corrosive conditions. It will furnish the necessary adhesion, abrasion, and non-penetrable characteristics, while a good corrosion resistant paint over it will furnish the corrosion resistant properties.

Accelerator for Latex

This new accelerator has recently been announced under the name "Latac." Chemically it is hexamethylene ammonium hexamethylene-dithiocarbamate, a water soluble dry powder stable in storage. Latex compounds containing "Latac" vulcanize rapidly at all temperatures and have excellent age resistance.

Joint Seal

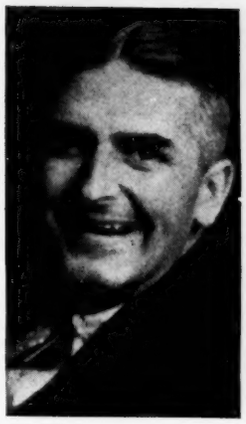
A joint seal completely resistant to propane, pentane, butene, benzol, gasoline, naphtha, grease, and oils of all types has recently been introduced after undergoing exhaustive tests made by the manufacturer, outside commercial laboratories, and users. This material, known as "Glycoseal," is flexible, leakproof and non-cracking. It will not harden and joints may be broken easily without damaging the fittings. It can be used on rubber (which it does not attack) as well as all kinds of metal fittings. "Glycoseal" will not harden under usual conditions of application. Samples left exposed to the air remain fluid and do not soak through textiles or other porous materials with which they come in contact.

Glass Marking Inks

Gold Seal laboratory inks for labeling small glass surfaces such as microscope slides and small containers are a recent offering in this field. They are used with steel pen, brush or rubber stamp. They are said to be non-acid, non-corrosive, non-inflammable, and resistant to acid, alkali, usual laboratory solvents, and high temperatures. They are also recommended for porcelain refractories and other ceramic materials. Colors available are red, white, blue and black.

Shipping and Container FORUM

By R. W. Lahey



I. C. C. HOLDS HEARING ON REVISED REGULATIONS FOR THE TRANSPORTATION OF DANGEROUS ARTICLES

COMMISSIONER John Monroe Johnson presided at a hearing in Washington on August 8th which was designated to hear comments and protests on the revised Regulations for the Transportation of Explosives and Other Dangerous Articles as contained in Proof No. 4 which has been in the hands of all interested parties for a few months. Examiner Barry and Mr. Louis I. Doyle of the Bureau of Service, I. C. C. participated. W. S. Topping, Chief Inspector of the Bureau of Explosives and Mr. Harry Campbell, Assistant Chief Inspector, presented the revised regulations to the Commission.

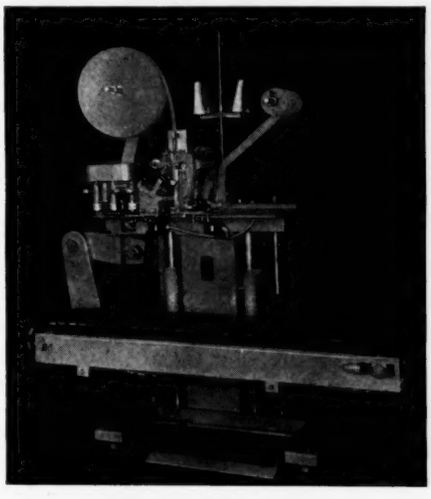
Mr. Campbell, in his remarks to the Commission, explained that Proof No. 4 incorporates all changes and additions which have been approved since the present Regulations were issued in 1930. This Proof also includes packing regulations for motor truck transportation and certain other changes and additions for rail transportation to bring these Regulations in accord with the best known means for safe transportation. Due to the failure of passage of the enabling act by Congress, the Department of Commerce regulations for water transportation incorporated in the new Proof have been cancelled and the existing Water Regulations which were made effective by the I. C. C. in 1935 have been maintained with certain changes and additions to bring them up to date. The Manufacturing Chemists Association, American Petroleum Institute, Compressed Gas Manufacturers' Association, National Paint, Varnish and Lacquer Association, Chlorine Institute, Inst. of Makers of Explosives, A.R.A. Tank Car Committee and Steel Barrel Manufacturers' Council were among the organizations represented. There were only two minor objections to the Regulations as recommended by the Bureau of Explosives.

The Bureau of Explosives held a series of conferences in Washington for the three days prior to the hearing. These meetings with representatives of shippers, carriers and other interested parties were successful in ironing out many differences of opinion. The efficient work of the Bureau of Explosives particularly, and the co-operation of shippers and carriers, are to be highly commended. The Bureau of Service of the I. C. C. has worked closely with the Bureau of Explosives and other interested parties and they also deserve credit for this fine piece of work.

The M. C. A. has requested that the Bureau of Explosives print the Regulations when approved in loose leaf form. This would facilitate the use of the Regulations by all concerned and when supplements are issued would merely require replacement of loose leaf pages. By this method the book would always be up to date and it would eliminate searching through supplements to be sure no changes had occurred.

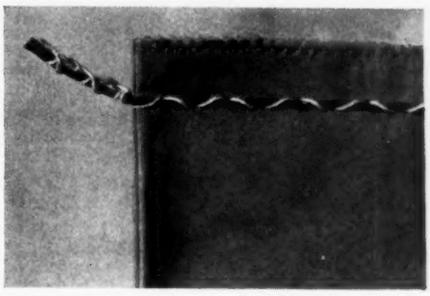
Bagpak's Improved Bag Closing Equipment

Bagpak, Inc.'s new Automatic Model "DA" Bagpaker illustrated on this page is designed to close and seal open mouth heavy duty multiwall paper bags at high speed. It has met with considerable success in actual factory operation. The machine consists of a sewing head and tape applicator mounted over a bag conveyor, the entire unit being driven by a one horse power dustproof motor. A turn of the wheel raises or lowers the bag conveyor, and thereby it can be used interchangeably for 100, 50 or 25 pound bags with practically no production loss. This closing unit weighs slightly less than 3,000 pounds and is portable as it is mounted on casters.

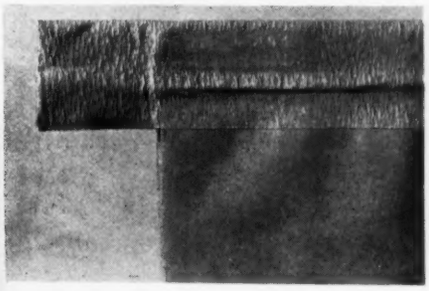


The operator, after forming the bag top for proper sewing, guides the bag mouth to the sewing head. There is a guide at this point which carries the bag through the closing operation without further attention from the operator. The starting and stopping of the sewing head and tape applicator as well as operation of thread and tape cutters are actuated by depressing a convenient foot pedal.

This unit is designed for use with existing weighing and filling equipment and since it is of fairly small, compact proportions, it will fit in most anywhere without expensive plant alterations. (See dimensional sketch.) It will successfully close and seal from six to ten pre-formed gussetted 100 pound bags per minute, depending upon how fast the bags are fed by the operator. If desired, the sacks may also be closed by sewing without the application of sealing tape.



A unique feature of this machine as with all Bagpakers is the Cushion Stitch Closure. The sewing unit lays a thick compressible paper cord across the end of the bag and stitches around it, without going through it, a "snake" or cross stitch. This cord forms a cushion or



shock absorber that takes up the strains due to handling or dropping the bag and prevents the stitching from pulling through the bag walls. The illustrations above show the Cushion Stitch before and after the application of the sealing tape, while that on the right shows the finished sealed closure as it comes from the Model "DA" Bagpaker. It will be noted that the tape is applied *over* the stitching, thus effecting a tightly sealed, siftproof

Wolf Package Award Standards To Be Revised

The Irwin D. Wolf Awards for Distinctive Merit in Packaging, a feature of the Annual Packaging Exposition, will not be held in connection with the next Exposition, scheduled for Chicago in April, 1941, but will be suspended for this year pending a study of how the Awards should be revised to better meet the newer phases of packaging developments in the future.

The Awards were established by the Association in 1931 at the suggestion of Irwin D. Wolf, Vice President of the Kaufmann Department Stores, Pittsburgh.

"The American Management Association believes," Mr. Dodd, the president, said, "that package users and suppliers alike widely recognize and applaud the vital part played by the Irwin D. Wolf Awards in the stimulation of better packaging. The Association's decision to suspend the Awards this year is premised on the belief that they should be perhaps modified from their present form. We shall seek a plan by which the Awards may enter upon a new and revitalized role."

EDITOR'S COMMENT:

It is hoped that the change in awards will give more consideration to the protective features and the manufacturing processes necessary to properly and economically fill, and close the packages and the shipping containers. Along with the merchandizing value or shelf appeal of the package, the essentials of production and product protection, often play a major part. Many new and different packages which have been designed for merchandising value have caused production men and machine designers to overcome almost insurmountable difficulties. We need three way co-operation for effective sales. Production, protection (both from the atmosphere and transportation abuses) and merchandising.

It is also hoped that some effective scheme can be devised to create interest in the so-called bulk containers. These larger containers offer many opportunities for improvement and development.

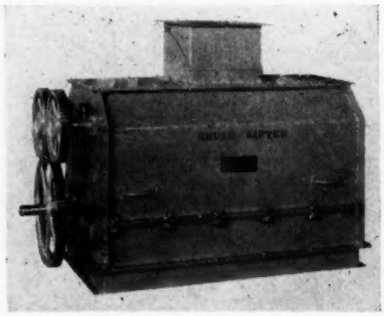
Safe Practices for Handling Wet Nitrocellulose Cotton

The Manufacturing Chemists' Association have again made a valuable contribution to the Chemical Industry in their publication of a manual entitled "Handling of Nitrocellulose Wet With Alcohol (or Other Organic Liquid) or Water While in I.C.C. Containers; in Storage or in Process."

This comprehensive pamphlet covers the handling of filled and empty containers in transportation and storage and during the filling and emptying processes. There are detailed recommendations covering trucks for hauling, types of storage buildings, dispensing of nitrocellulose from bilge barrels, equipment such as skids, tools for dispensing, electrical tools and wiring, as well as a complete set of safety recommendations.

New Brush Sifter QC 83

To provide a unit for wider application to the handling of lumpy materials that must be broken up and screened before they can be processed or packaged, this new, improved, all steel case brush sifter has been developed. Material is first broken up by the intermeshing fingers of the twin agitator shafts and is then brushed through a wire screen cage under the brush cylinder. This new construction provides a dust tight, forced bolting unit that can be conveniently placed over mixers or processing tanks when product must be screened before these operations. When desired, the unit can be furnished with non-corrosive case. Brush cylinder is 16 in. in diameter and 42 in. long. A big capacity unit.



Shown in the illustration is the latest type of Kennametal valve. Known as a "slow up valve," it has a small ring of Kennametal inserted in the valve seat, with a cone-shaped piece of Kennametal, ground and lapped to the same angle of chamfer, tipped on the valve stem. Both seat and stem are lapped so accurately they will hold a vacuum.

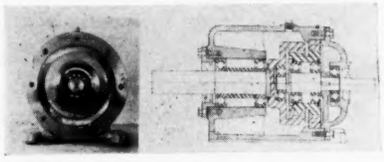
High Temperature Swing Joint QC 84

A new high temperature swing joint bas been designed and is being made in six different styles for full 360° rotation in one, two and three planes. These styles are recommended for applications handling steam or chemicals where temperatures do not exceed 700° F. or a working pressure of 500 pounds.

Speed Reducer QC 85

A new speed reducer which develops high ratio speed reductions without use of large gears or drives has been developed.

A double spur or combination spur and internal gear, ball bearing mounted on drive shaft eccentric, meshes with a stationary internal gear. In mesh with the secondary gear is either a spur or internal gear which is solid and concentric with the output shaft. Eccentric drives initial spur around pitch line of the stationary internal gear. Since initial spur and secondary gear are solid, the speed of the latter is controlled by ratio between initial spur and stationary gear.



To obtain large ratios, a small difference in number of teeth between spur gear and internal gear is used. This makes the pitch line of the spur almost conform to that of the internal gear. Thus a large number of teeth are engaged, increasing the load-carrying factor. Efficiencies of this design range between 70 and 90 per cent. with reduction ratios from 20:1 to 7500:1.

Electric Etcher QC 86

Everything safely enclosed and out of the way is the outstanding feature of a new electric etcher. The etcher tool and cords, switch and indicator lamp are all under cover. Small objects are etched right on the work plate which makes up part of the case while a ground clamp is furnished for larger objects. The cover is removable if desired.

Etching heats are 120, 240, 420, and 700 watts—a red indicator lamp burns brighter as the hotter heats are turned on. The tool is used for permanently marking tools, parts, dies, bearings, saws, drills, products in production and finished parts. The markings are made as with a pencil and the marking is clearly and permanently burned into the metal. The standard unit is for 110 volt, 60 cycle, A.C. current. Other voltages and frequencies are available. Overall size, only 7¼" x 5⅛" x 8½". Weight complete, 16 pounds.

Chemical Industries
522 Fifth Ave., N. Y. City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 83	QC 85
" 84	" 86

Name .....

Title ..... **Company** .....

Address .....

NEW CHEMICALS FOR INDUSTRY

Scene at West Virginia Pulp & Paper's Piedmont plant showing wood pulp passing through Belmer Bleachers. Sodium Chlorite discussed in the following pages is expected to become an effective agent in this process.

(Photo courtesy of West Virginia Pulp & Paper Co.)

Digest of Chemical Developments in Converting and Processing Fields

CHEMICAL INDUSTRIES

SODIUM CHLORITE Being Produced Commercially For First Time

By G. P. Vincent, *The Mathieson Alkali Works (Inc.)*

Although Its Field of Usefulness Has Been Only Partly Explored, It Is Already Evident That Sodium Chlorite Is Able To Simplify Certain Widely Used Chemical Processes, Improve the Quality of Many Products, Make Possible New Ones.

SODIUM chlorite, having the formula $NaClO_2$, is a new commercial chemical which promises to be of great importance to the wood pulp, textile and other industries.

Scientifically, of course, it is not new, since it was prepared by the French chemist Millon in 1843. But, although chlorite is closely related to two important groups of compounds, the hypochlorites and the chlorates, no attention was paid to its commercial possibilities until recent research work disclosed that it possesses many valuable properties.

Although its field of usefulness has been only partly explored, it is already evident that chlorite is able to simplify certain widely used chemical processes, improve the quality of a variety of common products, and make possible the production of new products.

Specifically, research has shown that chlorite can be used to advantage in the following operations: (1) the bleaching of wood pulp, cotton, viscose rayon, acetate rayon, nylon, straw, hemp, wood, flour, and other products; (2) the scouring and kiering of cotton and rayon; (3) the manufacture of starch; and (4) the carrying out of certain organic oxidation reactions. Other possibilities are being studied by the makers and by potential users of the product.

The Chemical Action of Chlorite

Chlorite owes its commercial value to its unique oxidizing powers. This point is made clear by Fig. 1, which shows the "oxidation potential" curves of chlorite and of two commonly used oxidizing (and bleaching) agents, hypochlorite and peroxide. As will be seen, the oxidizing powers of chlorite are less than those of hypochlorite, although somewhat greater than those of peroxide.

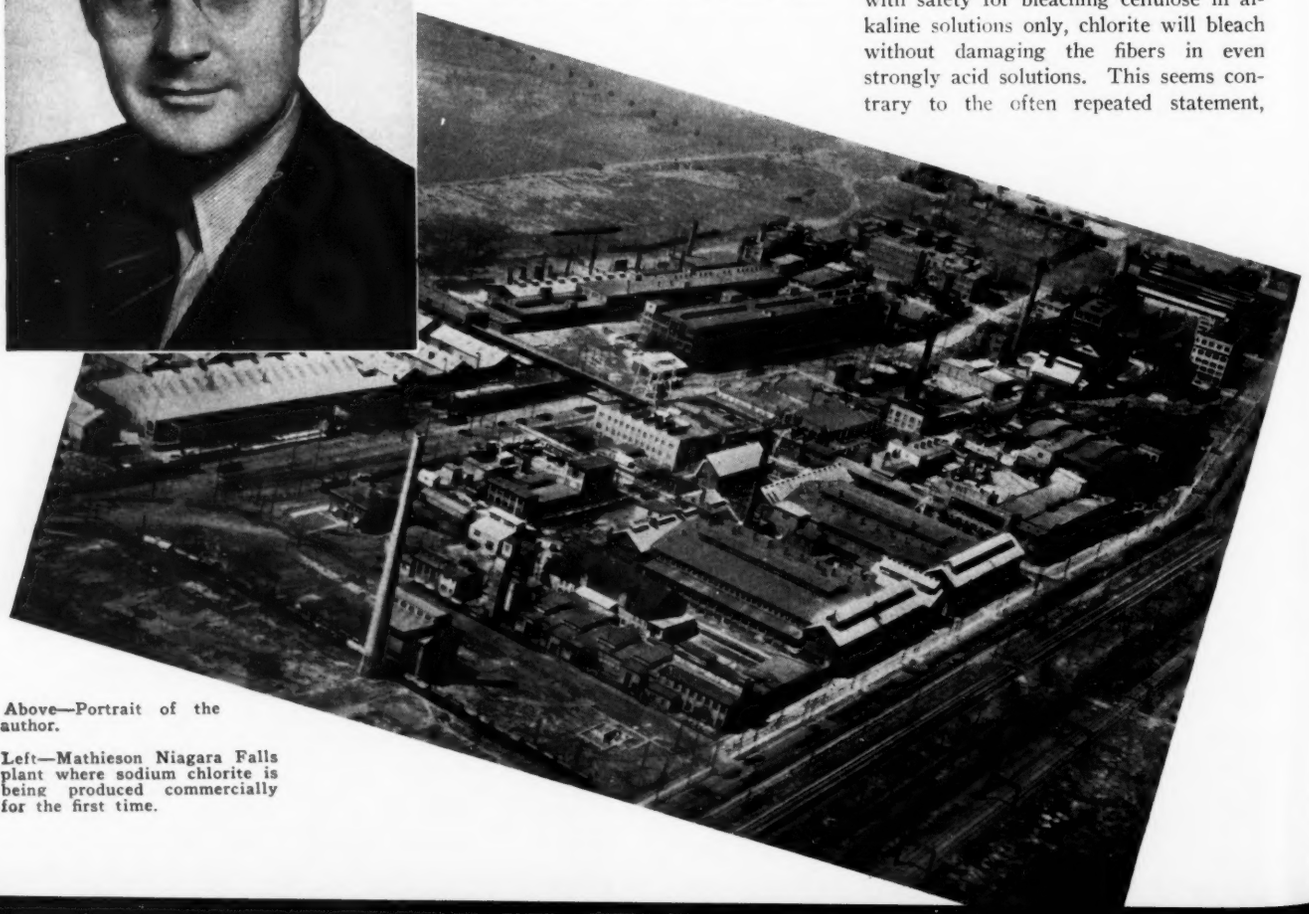
This mild oxidizing action makes chlorite especially suitable for bleaching cellulosic materials.

When hypochlorite is used to bleach cellulose, it will first oxidize the associated coloring materials, if they are present in relatively large quantities; but when the bleaching process is nearly complete and only traces of coloring matter remain, hypochlorite then tends to oxidize the cellulose, thus damaging the fibers. Careful control can minimize the damage, but attempts to secure high brightness with hypochlorite are very likely to result in a weakened product.

Bleaches Associated Matter

Chlorite, on the other hand, is powerful enough to oxidize, and therefore bleach, the associated coloring matter, but it is not powerful enough to oxidize, and therefore attack, the cellulose itself. Hence, with chlorite, it is possible to bleach cellulose very white, without injuring the fibers and without rigid chemical control, thus making possible better products and providing opportunities for reduced costs.

Another point brought out by Fig. 1 is that, whereas hypochlorite can be used with safety for bleaching cellulose in alkaline solutions only, chlorite will bleach without damaging the fibers in even strongly acid solutions. This seems contrary to the often repeated statement,



Above—Portrait of the author.

Left—Mathieson Niagara Falls plant where sodium chlorite is being produced commercially for the first time.

"Acid damages the fiber." The truth is that damage does occur in acid solutions when hypochlorite is used, but the damage is due to the hypochlorite and not to the acid.

Because chlorite does not damage the fibers even in fairly strong acid solutions, its use permits advantageous changes in a number of important processes, particularly in the textile industry.

In acid solutions, $NaClO_2$ yields $HClO_2$, ClO_2, and some NaCl and $NaClO_3$. The exact reaction varies with conditions, but neither Cl or Cl_2O is produced.

Referring again to Fig. 1, the oxidizing power of chlorite is shown to be very low in strongly alkaline solutions. In fact, chlorite alone in such solutions bleaches so slowly as to be impracticable for this purpose. But chlorite can be "activated" in alkaline solutions by the addition of hypochlorite or chlorine, or both, with results characteristic of chlorite, not of the more powerful bleaching agents. This fact extends the usefulness of chlorite, permits it to be used in equipment designed for hypochlorite bleaching, and decreases the amount of chlorite required to effect certain bleaching operations.

In short, chlorite can be used as a bleaching agent in acid or alkaline solutions without any danger of its attacking cellulose.

A discussion of some of the practical applications of chlorite will best illustrate the commercial values of its special properties.

Bleaching Wood Pulp with Chlorite

When kraft pulp is bleached with hypochlorite, the chemical that is universally used for this purpose, it is possible to secure a brightness of 75 to 80 GE (the brightness of a standard magnesia block being 100 GE), without serious weakening of the fibers. But if a much higher brightness, say 85 GE, is obtained with the use of hypochlorite, the fibers will be attacked and the paper made from them will be so weak that its commercial value is greatly reduced.

On the other hand, when chlorite is used for bleaching kraft pulp, a GE brightness of 85, or higher, can be obtained without altering the original strength of the fiber. The paper that can be made from this pulp is stronger than any that can be made with pulp bleached to the same point with hypochlorite, thus making it possible to use this important product for a variety of purposes where its color has heretofore prevented its acceptance.

The results of a number of tests on pulps bleached to a brightness of 86 GE by both chlorite and hypochlorite are given in the following table, together with data on the original pulp for comparison:

Similar results can be obtained in bleaching sulfite pulps and also pulps for special purposes, such as the manufacture of rayon. In addition, chlorite-bleached pulps retain their brightness longer than hypochlorite-bleached pulps, and there is no loss of either viscosity or alpha-cellulose content.

While wood pulp can be bleached with chlorite alone, practical cost considerations favor the use of hypochlorite or chlorine (or both) for a preliminary bleaching and chlorite to obtain the final brightness.

In bleaching wood pulp with chlorite, the following conditions are typical:

Pulp density, 5%

pH, 4.5-5.5 (using sulfuric, hydrochloric, or acetic acid)

Temp. 60°-80° C.

Chlorite (as "C2," the form supplied for pulp bleaching)—0.4% of pulp weight.

Time, 2 hours.

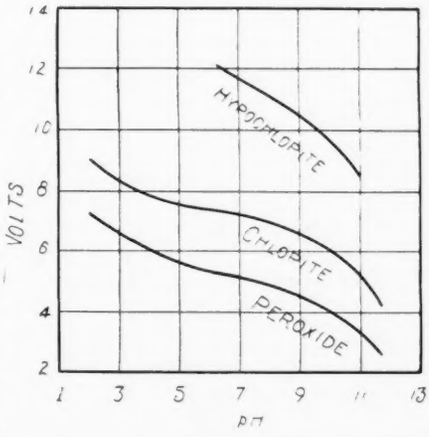


Fig. 1

Oxidation potentials of bleaching agents referred to the normal hydrogen electrode.

Chlorite in Textile Finishing

Since cotton, rayon, and other textile fibers are not injured by chlorite, they can be bleached with this chemical without exercising careful control over the process.

This property, while convenient, would not of itself justify the extensive use of chlorite for textile finishing. But another property of chlorite makes possible a considerable reduction in the cost of certain finishing processes.

With the use of the chemicals now generally employed, it is necessary to scour and bleach spun rayon, spun rayon mixtures, and pigmented rayon fabrics in separate operations. However, by using special synthetic detergents and chlorite in an acid solution, it is easily possible to scour and bleach these materials at the same time, thus reducing both the time and the equipment needed to carry out these processes. Moreover, brighter and more even colors on dyeing are obtained.

To illustrate this procedure, the following details of the method employed to scour and bleach spun rayon in one step are given:

Material—spun rayon, 3000 yards

Equipment—Dyebeck, 1700 gal. capacity.

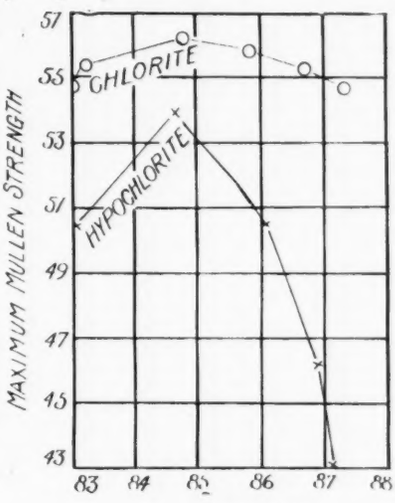
After desize treatment, if needed, place goods in a bath consisting of 1700 gallons of water, 2 lbs. of a detergent active in an acid solution, 6-10 quarts 28% acetic acid, and 3-4 lbs. chlorite (as "Textone," the form suitable for textile finishing).

When goods are in bath, heat as close to boiling point as possible. Desired whiteness and scouring action are generally obtained in about one hour. Drop liquor and wash with hot water. No antichlor is needed.

In the special case of cellulose acetate rayon, no yellowing will take place if these fibers are scoured and bleached with chlorite in an acid solution, whereas this discoloration is likely to occur in alkaline solutions unless the utmost care is

Fig. 2

Hypochlorite & Chlorite Bleaching Compared



Lines connect highest Mullen strength values obtained by testing kraft pulp bleached with hypochlorite and chlorite, for various G. E. hypochlorite and chlorite, for various GE loses strength as GE brightness is increased, while strength with chlorite bleaching is practically constant. Most Mullen strength values with hypochlorite bleaching lie below 49.9, which is the minimum Mullen strength value found in testing original pulp. All chlorite values lie above 49.9.

Properties of Paper Made with Kraft Pulp Bleached to High Brightness

Treatment of Pulp	No. of Tests Averaged	GE Brightness	GE Brightness after 1 yr.	Maximum Mullen Strength	Tear at 70 Sec. Freeness
Bleached with Chlorite	14	86.6	84.5	53.0	45.6
Bleached with Hypochlorite	7	86.4	80.3	45.8	39.4
Original	5	79.4	78.6	51.5	47.5

taken to prevent it. In addition, injury to the fusion properties of acetate, due to the formation of regenerated cellulose, is eliminated.

Likewise, the use of chlorite simplifies the kiering operation for all textiles by eliminating the need for acid griege sour and more than one boil, and results in a more even "prepare" and in a better and more permanent white. When malting is employed, chlorite effects a more even starch removal and permits more even dyeing.

In using chlorite in the kier, about 1.5 lbs. of chlorite (as "Textone") per 1000 lbs. of goods are added to the caustic make-up tank and fed into the kier. The kier is then brought up to temperature and pressure in the usual way and treatment continued for about 2 hours. Goods are then washed as usual. The chlorite does no bleaching in this highly alkaline solution but aids the subsequent bleaching step.

An interesting application of chlorite in textile finishing is in stripping colors. Because it does not work as rapidly as hypochlorite, the process can be controlled more accurately, so that the operator can reduce the shade to exactly the intensity desired.

These samples cover only a few of the applications of chlorite in textile finishing. Research work on many others is being carried on by both the producer of chlorite and by textile finishers, and it is apparent that the new chemical is destined to bring about some radical changes in this industry.

Other Applications of Chlorite

Chlorite is proving useful in starch manufacture because it bleaches this product to its best color, modifies it without the necessity for careful control, and frees it of thermophilic bacteria.

It is of value in organic oxidations where it is desired to operate in slightly acid aqueous solutions with careful control of temperature of pH.

When chlorine is passed into strong chlorite solutions, ClO_2 is formed, according to the formula $2NaClO_2 + Cl_2 \rightarrow 2NaCl + 2ClO_2$. Chlorine dioxide is useful for bleaching flour and other products and may play a part in water purification.

Practical Details

Chlorite is a very soluble and stable compound. In the solid form, it is non-hygroscopic and does not seriously cake in storage, and its solutions do not lose measurable oxidizing power over a period of years.

It crystallizes in two forms, anhydrous and as a trihydrate. Only the former, however, is of commercial importance.

Not only sodium chlorite, but calcium chlorite and other chlorites can be produced, but, so far, no special uses for chlorites other than sodium have appeared.

For use in bleaching wood pulp, a product comprised largely of sodium chlorite is supplied under the trade name of "C2." A special form for the use of the textile industry is known as "Textone." For other purposes, a commercial grade of sodium chlorite is used.

Like chlorine, hypochlorite, and chlorate, special precautions have to be employed in handling, storing, and using chlorite, but, with due care, it is not hazardous.

Its reaction with sulfur is, however, unique and should be mentioned. A mixture of sulfur and chlorite will ignite if rubbed or slightly moistened, and there is enough sulfur in ordinary rubber to cause a slight pop when a piece is rubbed on moist chlorite. Hence, bottles containing chlorite should be closed with glass or cork stoppers, and rubber gloves, rubber aprons, and other articles of clothing made of rubber should never be used when handling the solid material.

Chlorite is not yet available in large quantities, but it can be obtained in amounts sufficient for regular industrial use on a moderate scale.

Booklets and Catalogs

Chemicals

A209. Aluminum Sulfate; a discussion of the properties of aluminum sulfate and its use in the purification of water and treatment of sewage. General Chemical Co.

A210. Cabot Carbon Black; 12-page booklet, first of a series of graphical presentations covering the manufacture of carbon black and its relation to the fields of rubber, paint, lacquer, ink, and paper manufacture. Godfrey L. Cabot, Inc.

A211. Ciba Review, 34; Story on the development of footwear. The Ciba Co.

A212. Durez Plastic News, July-August, 1940; Describes and illustrates several new ideas in molded plastics. Durez Plastics and Chemicals, Inc.

A213. Fine Organic Chemicals; Catalog divided into 2 parts. The first part is devoted to fine organic chemicals, the second to spot test reagents as described by Dr. F. Feigl in his book "Spot Tests." Paragon Testing Laboratories.

A214. Hercules Chemist, No. 7, 1940; Contains discussion of rosin—its composition, properties, and uses. Discusses recent developments in cellulose chemistry, and describes a number of Hercules products and their uses in the industry. Hercules Powder Co.

A215. Laboratory Gases, No. 2, July, 1934; Prices and other information on a number of gases available to the industry. Matheson Co.

A216. Maintenance Painting Handbook; a 128-page compendium of solutions to difficult industrial painting problems. Represents accumulation of reports and records of technical paint questions extending over a period of 27 years. American-Marietta Co.

A217. Priorities, August, 1940; Short article on casein. Prior Chemical Co.

A218. Safe Handling of Chlorine; This revised chart is neatly and attractively set up in green and black with cuts of the valves used on the three standard types of chlorine containers. The essential requirements in the safe handling of liquid chlorine are outlined in the form of 24 suggestions. Mathieson Alkali.

A219. Solvay Products; 48-page booklet listing and describing Solvay's products. Solvay Sales Corp.

A220. Synthetic Alcohols; describes 12 members of the alcohol group—from methanol to heptadecanol—giving the uses of each. A convenient table presents their principal properties—boiling points, specific gravities, vapor pressures, flash points, and various solubility data. Union Carbide and Carbon Corp.

A221. Varniton; catalog of chemical specialties. The Varniton Co.

Equipment—Containers

E304. Bulletin 315; 24 pages, illustrated, containing detailed specifications and performance data on wide range of thermostatically controlled, electrically heated constant temperature laboratory equipment. Precision Scientific Co.

E305. Chemical Solution Feeders; contains detailed description of this constant rate feeder which provides control of chemical solutions wherever gravity flow to the point of application or a pump suction box is required. International Filter Co.

E306. Condenser News, August, 1940; describes and illustrates laboratory equipment. Scientific Glass Apparatus Co.

E307. Conservation of Gasoline; the information contained in this manual is result of various conservation tests and shows actual loss incurred through storage of gasoline in some storage tanks. It shows how this loss can be prevented by selecting equipment specifically designed for the purpose of conserving gasoline. Graver Tank & Mfg. Co., Inc.

E308. Gear Reducers, Book No. 1519-A; obsoletes Book 1519, additions of several new sizes, and changes in construction, have brought about revisions in both horse power ratings and dimensions. Link-Belt Co.

E309. Glascote; 24-page booklet, illustrates, describes, and gives specifications for line of highly acid-resistant, glass-lined equipment. Glascote Products, Inc.

E310. Gyrating Screens Bulletin No. 376; illustrates and describes a line of this equipment. The J. H. Day Co.

E311. Imp Pulverizer, Bulletin No. 47; description, illustration and typical applications of this pulverizing mill with flash drying. Raymond Pulverizer Division, Combustion Engineering Co., Inc.

E312. Magnetic Disc Brakes, Bulletin No. 604; contains descriptions, specifications, formulas, installation views and other information valuable to users and prospective users of magnetic brakes. Stearns Magnetic Mfg. Co.

E313. Metco News; First issue of periodical devoted to latest developments and applications of the metal spraying process. Metallizing Engineering Co., Inc.

E314. Pressure Reducing and Desuperheating, Bulletin 107-A; includes diagrammatic arrangements, installation photographs, and detailed photos of individual control units. The Bailey Meter Co.

E315. Pure Yeast Culture Apparatus; gives in detail the method of operation and the advantages of this type of apparatus. Also includes information on the use of stainless steel process for yeast culture. Schwarz Laboratories, Inc.

E316. The Spiral Heat Exchanger; 20-page booklet containing colored, diagrammatic illustrations and full description of design and operation of spiral type heat exchanger which can be used for recovery of heat from most kinds of liquids, vapors, steam and gas mixings, and in some cases where recovery of heat has not been considered profitable. Also describes and illustrates the uses and applications in such locations as sulfite pulp mills, sulfate pulp mills and sugar refineries. American Heat Reclaiming Co.

E317. Tin and Its Uses, July, 1940; contains illustrated article describing special tinning machine designed to produce more uniform and less porous tin coatings on tinplate. Explains uses of fusible alloys for mounting of dies and punches for press tool work, for foundry work, and for bending tubes and sections. Also contains article on fluxes for soldering and several other interesting items. The International Tin Research and Development Council.

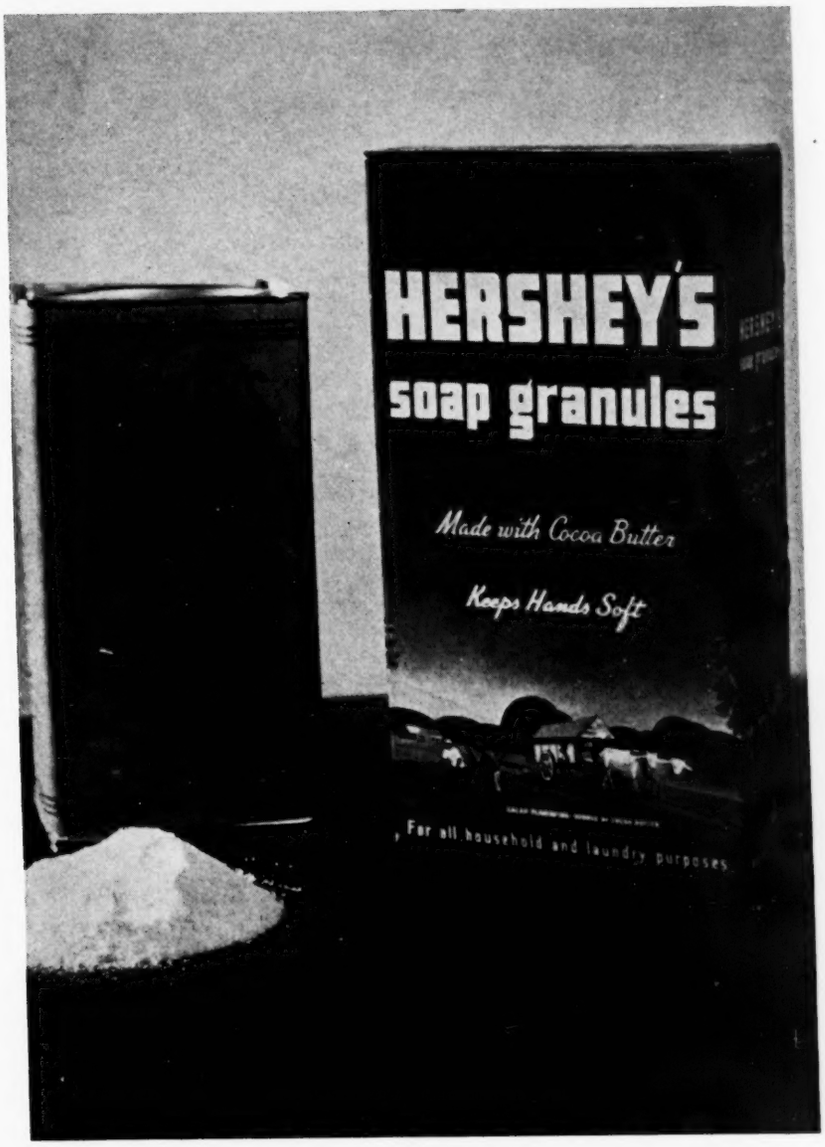
E318. Tube Fabricating Equipment; 34-page bulletin describes, illustrates, gives instructions for use, and supplies prices tube benders. The Parker Appliance Co.

E319. Type in 40 Unipower; Folder listing advantages of this improved piece of equipment. The Patterson Foundry & Machine Co.

E320. Welding Briefs, July, 1940; short news items of interesting industrial applications of electric arc welding. Metal & Thermit Corp.

E321. 7 Minutes with 7 Metals; General guide to the uses and properties of nickel and high nickel alloys. Contains detailed tables on mechanical, chemical, and physical properties. International Nickel Co., Inc.

CHEMICAL SPECIALTIES



Hershey Estates, Hershey, Pa., has introduced this new carton for its Soap Granules. The design combines a background for product's cocoa butter selling theme, and employs four color process printing. Sampling is now being completed in Pennsylvania. Charles F. Wilkinson, art director, McKee & Albright, Inc., Philadelphia, designed the package.

INDUSTRIAL · HOUSEHOLD · AGRICULTURAL

CHEMICAL INDUSTRIES

Aerosol wetting agents are produced at Cyanamid's Bridgeville, Pa., plant.

AEROSOL WETTING AGENTS

Their Properties and Their Uses

By C. A. Sluhan, *American Cyanamid & Chemical Corp.*

Wetting Agents Play a Major Part in the Composition of a Wide Variety of Chemical Specialties, Many Uses of Which Are Discussed in This Article.

INDUSTRY'S search for more efficient and more economical processes has, in the last few years, resulted in an extremely widespread interest in the group of organic compounds classified as wetting agents. The industrial potentialities of these compounds are unquestionably tremendous. They are already being used in an extraordinarily diversified range of applications, and new uses are daily being uncovered. Wherever an industrial process brings into contact two immiscible liquids, or a liquid and a solid, it is reasonable to suppose that a wetting agent, by reducing the tension at the interface, will allow the process to be carried on more rapidly and efficiently.

An extremely large number of compounds with wetting properties have been developed in recent years, and it is desirable to evaluate some of these compounds from the standpoint of economy to the user. Both from theoretical consideration and from actual tests, it appears that among the most powerful wetting agents yet developed and made commercially available are the esters of sulfonated dicarboxylic acid. These compounds were developed by Dr. A. O. Jaeger[1] in the American Cyanamid Company Laboratories, and are marketed under the trademark Aerosol.

There are five types of *Aerosol Wetting agents, designated as OT, MA, AY, IB, and OS. All except the OS are esters of sulfonated dicarboxylic acid. OT is the dioctyl ester, MA the dihexyl, AY the diamyl, and IB the dibutyl. Aerosol OS is an alkyl naphthalene sulfonate.

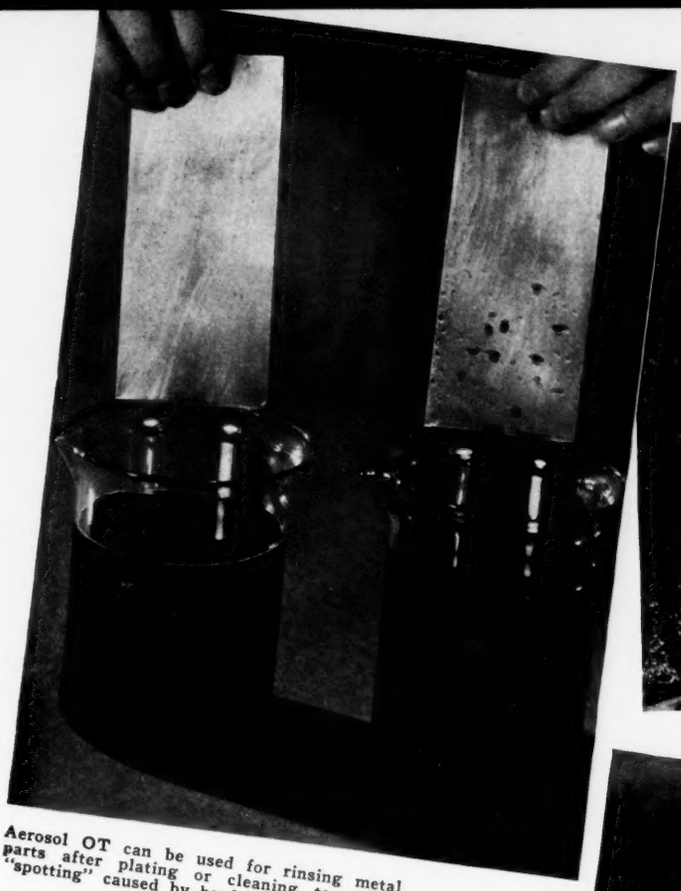
The four esters are among the few wetting agents available in pure form, and have the advantage of being soluble in most organic solvents as well as in water. Of this group, the OT type is the most powerful, and is the most effective and economical wetting agent known for most applications.

In considering the effectiveness of the Aerosol Wetting Agents, it may be convenient to review briefly the type of molecular structure which any wetting agent must possess to obtain optimum effects. It is well known that a wetting agent reduces surface tension by creating what is, in effect, a new surface with a lower tension than the original.

In order to accomplish this result, a wetting agent must fall in the class of heteropolar, or polar-nonpolar, compounds. The polar portion is water-soluble, the non-polar portion is oil soluble. When a wetting agent is added to water, the molecules of the wetting agent, because of their structure, orient themselves with their polar portions directed toward the water, and their non-polar portions toward the air, or toward any surface with which the water solution comes in contact.[2] The oil soluble portions of the molecules thus form a new surface, which is oil-like in character.

This polar-nonpolar structure is of course common to all wetting agents. The relative wetting power and economy of different types of wetting agents are markedly affected by other characteristics of the molecular structure. Considering for the moment only the use of the wetting agent in water containing no electrolyte, it may be stated in general that an increase in the weight of the nonpolar portion of the molecule results in greater wetting power, up to the point where the wetting agent becomes too insoluble. It must be noted also that the wetting agent must be added in sufficient quantities to form a monomolecular film on the entire surface of the water and the interfaces between the solution and any other surfaces. Since the molecules of the wetting agent orient themselves at the interface, it is obvious that the number of molecules needed to form the film depends on the diameter of the molecules.

Figure 1, published on another page, shows the molecular structure of Aerosol OT, Aerosol MA, Aerosol OS, a sulfated fatty alcohol, and a sulfonated amide. It will be seen from this figure how fully Aerosol OT meets the theo-



Aerosol OT can be used for rinsing metal parts after plating or cleaning to reduce "spotting" caused by hard water.

Above—Wetting agents are used in mine cutting and loading operations to help prevent formation of explosive dusts.

Coasters treated with wetting agents absorb moisture far faster than untreated ones. Contrast treated coaster at right with one at left.

retical requirements for a powerful wetting agent. In Aerosol OT, the polar group is approximately in the middle of a branched chain. When oriented, the molecule is relatively short and large in area. Comparatively few molecules are therefore needed to form a complete surface.

In the sulfated fatty alcohol and the sulfonated amide, the polar group is at the end of a long non-polar group. The oriented molecules are long and relatively small in diameter, and more of them are needed to form a complete surface.

In the case of Aerosol MA, it will be noted that the non-polar chain is of lower weight than in Aerosol OT, and the MA type, by virtue of the fact that it has a less favorable "balance," is a less powerful wetting agent in water than the OT.

The high wetting power of Aerosol OT is shown by the Draves test.[3] In this test, standard skeins of cotton yarn are immersed in aqueous solutions of wetting agents, and the time required for the skein to sink is recorded. The comparative times for Aerosol OT, MA, and OS, a sulfated fatty alcohol, and a sulfonated amide are shown in Figure 2. The marked superiority of Aerosol OT is immediately obvious.

The effect of the weight of the non-polar portion on wetting power has already been pointed out. In determining the suitability of a wetting agent for a specific application, it must be remembered that the weight of the non-polar portion also has a marked effect on the solubility in water and in electrolytes. Since the dioctyl ester (Aerosol OT) is a more powerful wetting agent than the dihexyl ester (Aerosol MA), it might be supposed that the dilauryl ester would be even more effective. Actually, however, this ester is practically insoluble in water at room temperature, and is thus valueless as a wetting agent in aqueous solutions.

The dioctyl ester (Aerosol OT) with its shorter nonpolar chain is soluble in water to the amount of about 1.5 per cent. In the case of Aerosol MA (with a still shorter nonpolar chain) the solubility increases to 33.4 per cent., although the wetting power is sharply reduced. Apparently, therefore, in order for a wetting agent to be most effective, it should be neither too soluble nor too insoluble in water. At ordinary temperatures and at moderately elevated temperatures, Aerosol OT is most effective since it has the proper "balance."

In the presence of an electrolyte, however, very different conditions prevail. Even relatively low concentrations of salt (1 per cent. or more) adversely affect the wetting power of Aerosol OT. On the other hand, the wetting power of Aerosol MA in salt solutions up to 5 per cent. is considerably greater than its wetting power in water. Aerosol IB, which in concentrations of 1 per cent. has no wetting power in ordinary water, shows considerable power in 20 per cent. solutions of sodium sulfate.

It is apparent that the selection of a wetting agent for greatest efficiency and economy must be made after careful consideration of the conditions under which it is to be used. Aerosol OT, because of its high wetting power, is the most economical of the Aerosol Wetting Agents

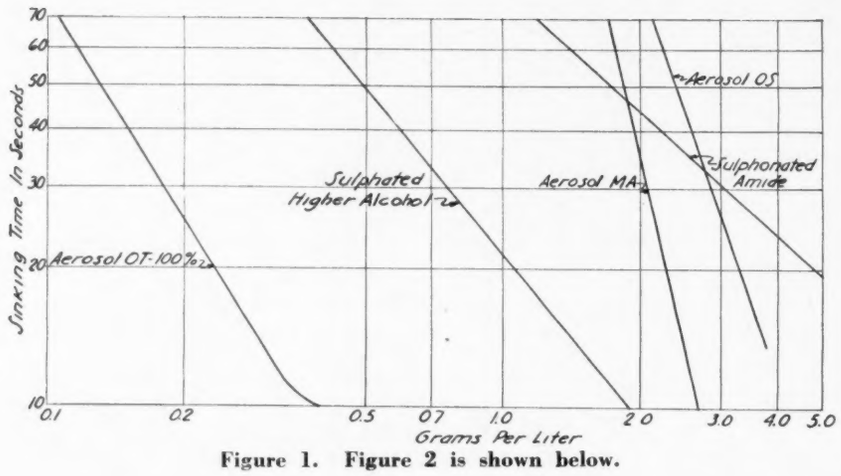


Figure 1. Figure 2 is shown below.

in most applications. It is satisfactory in neutral or acid solutions containing less than 1 per cent. electrolyte. With higher concentrations of the electrolyte, Aerosol OT salts out. Where stronger concentrations of the electrolyte are present, it is advantageous to use one of the other Aerosol Wetting Agents, which, in spite of their lower inherent wetting power, become more effective than Aerosol OT under these conditions.

Since Aerosol OT, MA, AY, and IB are esters, they tend to hydrolyze in strongly alkaline solutions and their use is not advisable at pH above 9. Aerosol OS is recommended in strongly alkaline or strongly acid solutions and, for example, may be used in concentrations up to 18 per cent. sulfuric acid, 7 per cent. hydrochloric acid, and 6 per cent. caustic soda. It is stable under these conditions, and is a better wetting agent in the presence of electrolytes than in ordinary water

The Aerosol Wetting agents, it should be emphasized, are intended primarily as wetting agents. Since they are completely soluble in most organic solvents and oils as well as in water, they find wide utility not only in applications where reducing the surface tension of water promotes rapidity or thoroughness of processing, but also where it is desired to promote compatibility between otherwise incompatible surfaces.

Some of the most unusual and interesting applications of Aerosol have been uncovered in the mining and metal-working industries. It serves to modify the filtering characteristics of gold and silver cyanide ores. It promotes the efficiency of degreasing operations, and is used with acids in cleaning metal parts after case hardening. In plating operations it prevents spotting of the work during rinsing, and the work dries evenly and rapidly. In cutting and grinding oils it allows the metal particles to sink after removal from the work. It is a useful ingredient of metal polishes.

Two applications of Aerosol by the metal industry are believed to be unique. One is in the testing of new steel drums for leaks. In this test the drums are immersed in water and air is blown into the drums. Use of Aerosol causes the water to run off more rapidly when the drums are removed, and thus prevents the absorption of water by the paint on the drums.

The second application is in the varnishing of tin cans. These cans usually have a film of palm oil on their surface, and Aerosol promotes compatibility between the oily surface and the clear varnish.

The coal industry, too, employs Aerosol to advantage. When Aerosol is added to the water in washing coal, a much larger percentage of the fines is washed off, and less water remains on the coal. At the cutting bar, Aerosol promotes wetting of the dust, and thus minimized the risk of dust explosions.

In the petroleum and related industries, Aerosol is useful in acidizing oil wells and washing out wells. It is employed in the refining of wax, and, in combination with the proper solvents, helps prevent sludge formation in fuel oils.

The manufacture and use of paints and inks offer interesting possibilities for the use of Aerosol. In the manufacture of pigments it alters oil absorption characteristics and promotes better chemical reaction. It gives soft pack in paints, and is especially useful in coatings that are to be applied to any surface that may have an oily residue. By wetting the globules of paint, it allows better recovery in paint spray booths. It is employed also in flushing colors, and it allows ordinary writing ink to be printed over regular printing ink when the latter is dry. It reduces the viscosity of chlorinated rubber inks—one aspect of its usefulness to the rubber industry. Other rubber applications include reducing the stringiness of ordinary or chlorinated rubber in solvents and improving the penetration of latex emulsions into fibrous materials, also for the uniform wetting of plating forms.

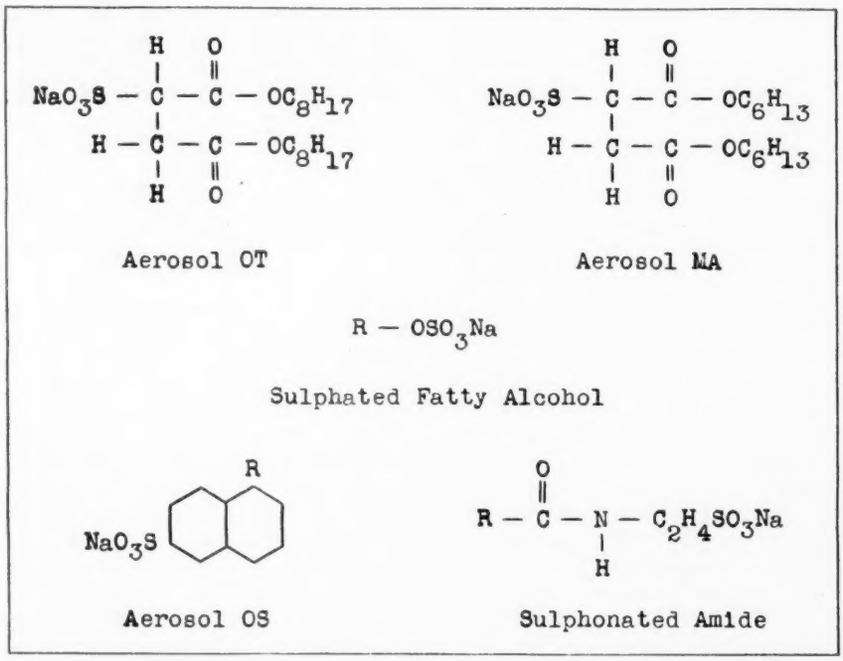
The Aerosol Wetting Agents are extensively used in a wide variety of cleaning and penetrating solutions. Typical instances are cleaners for white shoes, windows and eye-glasses, dry cleaning agents, typewriter cleaners, cleaning beer glasses, and moth-proofing solutions. They give better penetration in adhesives and wave set lotions; they promote the casing of tobacco and the cleaning of goose and chicken feathers.

Undoubtedly the Aerosol Wetting Agents will be useful in solving additional problems of wetting as industry continues to acquaint itself with the unique properties of this series of compounds.

* Registered U. S. Patent Office.

Literature cited

[1] Jaeger, A. O., U. S. Patent 2,028,091 (1936).
[2] Langmuir, *Proc. Natl. Acad. Sci. U. S.*, 3, 251-7 (1917).
[3] Am. Assoc. Textile Chemists and Colorists, *Yearbook*, 13, 162, (1935-36).



Who'll be FIRST.. *at the Finish?*

ASK yourself this question about your Packaged product at the point of sale! ★ It takes capable hands, clear heads and *motive power* to drive an outboard to the finish FIRST. ★ To Packaging, "NATIONAL" brings these same essentials pointed toward practical Container design and smartly lithographed display effects. ★ "NATIONAL" Container Service faces *your* starting signal..manned by merchandising experts . . surrounded by creative ideas . . powered by Can-making experience.

With **"NATIONAL"** *You're* **FIRST** *at the Point of Sale!*

NATIONAL CAN CORPORATION

SUBSIDIARY OF McKEESPORT TIN PLATE CORPORATION

EXECUTIVE OFFICES • 110 EAST 42nd STREET • NEW YORK CITY

Sales Offices and Plants • NEW YORK CITY • BALTIMORE • MASPETH, N. Y. • CHICAGO • BOSTON • DETROIT • HAMILTON, OHIO

CHEMICAL SPECIALTY *News!*

Most of Paint Industries Show Booths Already Sold—Spray Residue Tolerances Revised—Paint Clinic Company News—New Products

APPROXIMATELY 80 per cent. of the exhibition space available at the Paint Industries Show has been reserved, according to J. F. McMenamin, committee chairman. Show will be held Oct. 28 to Nov. 1, at Mayflower Hotel, Washington, under joint sponsorship of Federation of Paint and Varnish Production Clubs and National Paint, Varnish & Lacquer Association.

Companies which have reserved space include:

Resinous Products Company, J. H. Day Company, The Decalite Company, Stroock & Wittenberg Corporation, Standard-Knapp Corporation, Reichhold Chemicals, Inc., Falk & Co., American Cyanamid and Chemical Corporation, Anderson-Prichard Oil Corporation, National Carbon Company.

Also Owens-Illinois Can Company, Wheeling Corrugating Company, Wilson & Bennett Manufacturing Company, Continental Can Company, Hercules Powder Company, Burt Machine Company, Johns-Manville Corporation, Spencer Kellogg & Sons, Bakelite Corporation, Bramley Machinery Corporation.

Also Dow Chemical Company, General Electric Company, J. M. Lehman Company, The Neville Company, Kent Machinery Works, Binney & Smith Company, National Rubber Machinery Company.

Reservations for remainder of exhibition space should be addressed to Mr McMenamin at Felton, Sibley Co., 136 No. Fourth St., Philadelphia.

Spray Tolerance Change

Tolerances for lead and arsenic residue from insecticide sprays on apples and pears were revised upward recently by Paul V. McNutt, Federal Security Administrator.

New tolerances are 0.05 grain of lead per pound of fruit; 0.025 grain of arsenic on the same basis. Old tolerances, set in 1938, were 0.025 grain of lead, and 0.01 grain of arsenic per pound of fruit. Tolerance for fluorine remains unchanged at 0.02 grain.

New residue figures grew out of a scientific study of three years' investigation of the toxicity of lead arsenate spray residues by the U. S. Public Health Service. However, as the investigation involved only residue on apples and pears, the new tolerances do not apply to other foods.

Sherwin-Williams Expands

Sherwin-Williams Company will start immediate construction of an addition to its Chicago plant for production of organic chemicals, intermediates, and colors. The new unit will be erected on a portion of the sixty acre plot adjacent to the present S-W plant, purchased by the company early this year.

The $500,000 unit is the first in a general expansion program now being inaugurated by the company. Later, a new power plant, paint unit, and warehouse.

Creo-Dipt Company, Inc., North Tonawanda, N. Y., tied in with the clean up-paint up summer campaign through a window display contest for dealers, with designs submitted creating a considerable spurt in sales. Product has dropped old seven color paper label in favor of lithographed container shown above, manufactured by Owens-Illinois Can Company.

New Textile Thread

A new thread which, it is claimed, will greatly facilitate sewing operations in the textile field has been patented by Dr. Camille Dreyfus, president of the Celanese Corp. of America.

In the thread, fibers of materials not soluble in solvents for organic derivatives of cellulose are twisted together with a small amount of filaments of an organic derivative of cellulose, such as cellulose acetate. During or after the twisting operation, the thread is subjected to the action of a solvent or solvent vapor for the organic derivative of cellulose, with or without heat or pressure.

Industrial Paint Clinic

The Industrial Paint Clinic, a consultation service for the solution of industrial maintenance paint problems has been established in Chicago by Grover M. Hermann, president, American-Marietta Company. In discussing the need for such a clinic, Mr. Hermann declared that more than 100,000 requests for solution of paint problems have reached his company during the 27 years of its existence. Many hundreds, he said, originated in the chemical industry.

Such problems can now be turned over to the clinic with conservation of time and effort. The Clinic laboratories contain facilities for simulatng all known conditions of weather, climate, and industrial wear and tear.

Reardon Is Speaker

W. J. Reardon, Reardon Color & Chemical Works, made the presentation address honoring W. P. Anderson, board chairman, Ferro Concrete Company, who built the Ingalls Building in Cincinnati in 1902, first large concrete structure erected anywhere. Combined building industries of Greater Cincinnati awarded Mr. Anderson a plaque commemorating the event.

Ablo Introduced

American Bar Lock Co., Ablo Products Division, Long Island City, is introducing "Ablo," a new all-purpose synthetic rubber compound which adheres permanently to wood, stone, brick, concrete, metal, glass and other surfaces, according to the company.

Synthetic Cryolite

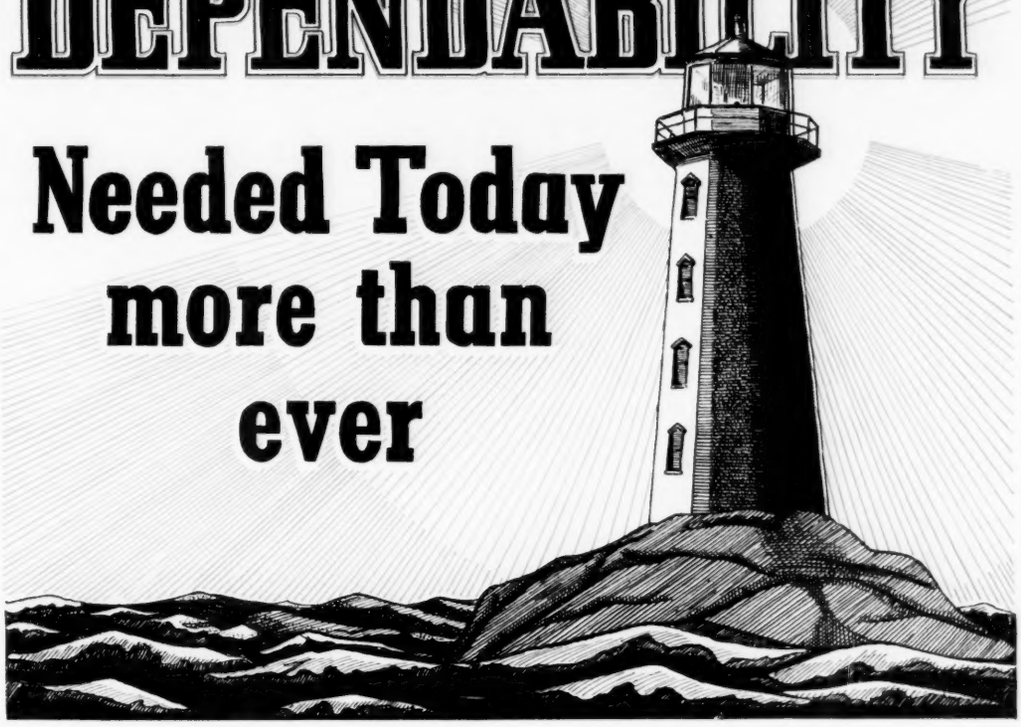
Synthetic Cryolite for insecticide purposes will shortly be manufactured by Aluminum Ore Co., Aluminum Corp., subsidiary. Product was formerly imported from Germany and France.

Pilot Incorporates

Pilot Chemical Co., of Youngstown, Ohio, has been incorporated to manufacture cleaning powders. Incorporators are Walter O. R. Johnson, Chester C. Beard, and James S. Cooper, attorneys.

DEPENDABILITY

Needed Today more than ever



WITH imports badly upset and raw materials unsettled, it is today more than ever important to look to a strong, well established source for your supplies.

Here you will find good stocks of Reliable INDUSTRIAL CHEMICALS, GUMS, WAXES and Allied products.

Back of these commodities is an accumulated experience of more than a century and a quarter, plus a reputation for good products and fair dealing.

ISCO CHEMICALS produced in our own plant at Niagara Falls, N. Y., include:

ISCO **CAUSTIC POTASH**—Solid, Flake, Granular, Powdered, Broken, Walnut and Liquid.

ISCO **CARBONATE OF POTASH**—Calcined, Hydrated and Liquid.

ISCO **IRON CHLORIDE** (Ferric Chloride) in Lump form.

ISCO **CHLORIDE OF LIME** (Bleaching Powder) Free Flowing.

ISCO **CAUSTIC SODA**—Solid, Flake, Crystals and Liquid.

RUBBERMAKERS' LIME

and other ELECTRO CHEMICALS.

ISCO GUMS and WAXES are our own importation, refined in our Jersey City plant, where skill, long experience and modern equipment assure satisfactory quality.

REFINED CARNAUBA and CANDELILLA WAX—Flake and Lump.

BEESWAX—Pure Yellow Refined and White Sunbleached.

CERESINES (Domestic) White, Yellow, Lemon Yellow and Orange.

GUM ARABIC—GUM KARAYA—LOCUST BEAN GUM—GUM TRAGACANTH.

ISCO TRINITY TALC—Comparable with the best imported—Fine white color—Consistent purity and slip—Continuous supply, prompt delivery and fair prices.

INNIS, SPEIDEN & CO., 117-119 LIBERTY STREET, **NEW YORK**

Established 1816

CHICAGO • CLEVELAND • BOSTON • PHILADELPHIA • CLOVERSVILLE, N. Y.

Make "Standard" BICHROMATES your standard

Bichromate of Soda

Bichromate of Potash

Chromate of Soda

Chromate of Potash

Ammonium Bichromate

PRIOR CHEMICAL CORPORATION - NEW YORK

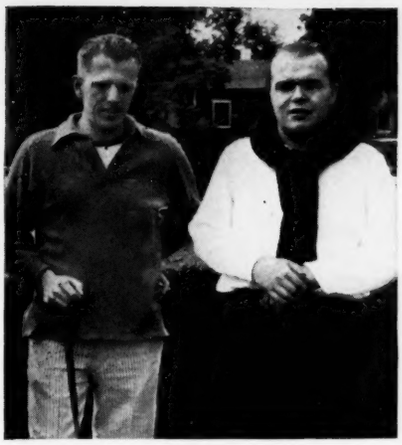
420 LEXINGTON AVENUE

Selling Agents for

STANDARD CHROMATE DIVISION

Diamond Alkali Company, Painesville, O.

Third Golf Tournament of the Salesmen's Association of the American Chemical Industry was held at Bonnie Briar, Westchester, N. Y. Charles Alexander, Seldner & Enequist was the low net winner in Class A and E. J. Boehm, National Aniline was the low net winner in Class B.



Left—Jack Seidler, Whitaker, Clark and Daniels, and "Don" Prior, Prior Chemical.

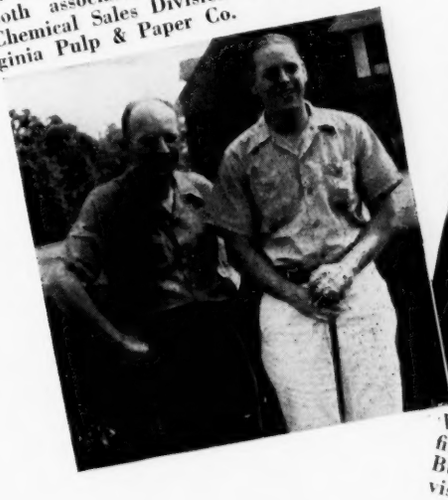
Above—Jack Henry, Joseph Turner & Co., "Ed" Boehm, National Aniline.

At the Left—Fred Berggren, Oldbury Electrochemical.

At the Right—"Tommy" Thompson, Mathieson Alkali, and president of the Association, and "Herb" Kranich, president of Kranich Soap, Brooklyn.

R. H. McCahan of E. I. du Pont de Nemours & Co., who won the guest kickers handicap, and Robert A. Kramer of Theo. Goldschmidt.

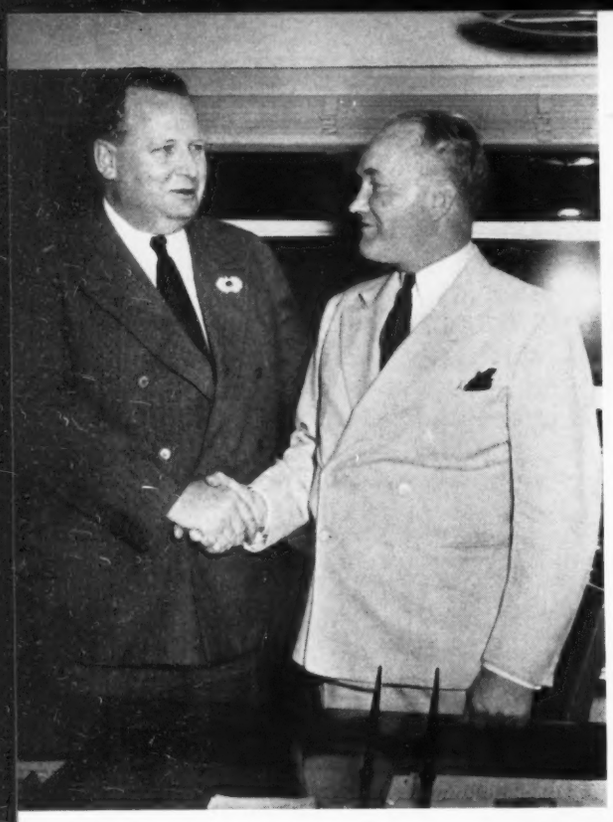
E. A. Sigworth and Ralph Hagberg, both associated with the Industrial Chemical Sales Division of West Virginia Pulp & Paper Co.



Wally Miller, superintendent of water filtration, City of Ossining, and Jack Butler, Industrial Chemical Sales Division of West Virginia Pulp & Paper.

At the Left—"Bob" Gould, Heyden Chemical, and R. C. Quortrup, Barrett.

F. C. Whitrock, Harry Smith and H. B. Clark, all of George Chemical, and "Cline" McKenna of Diamond Alkali.



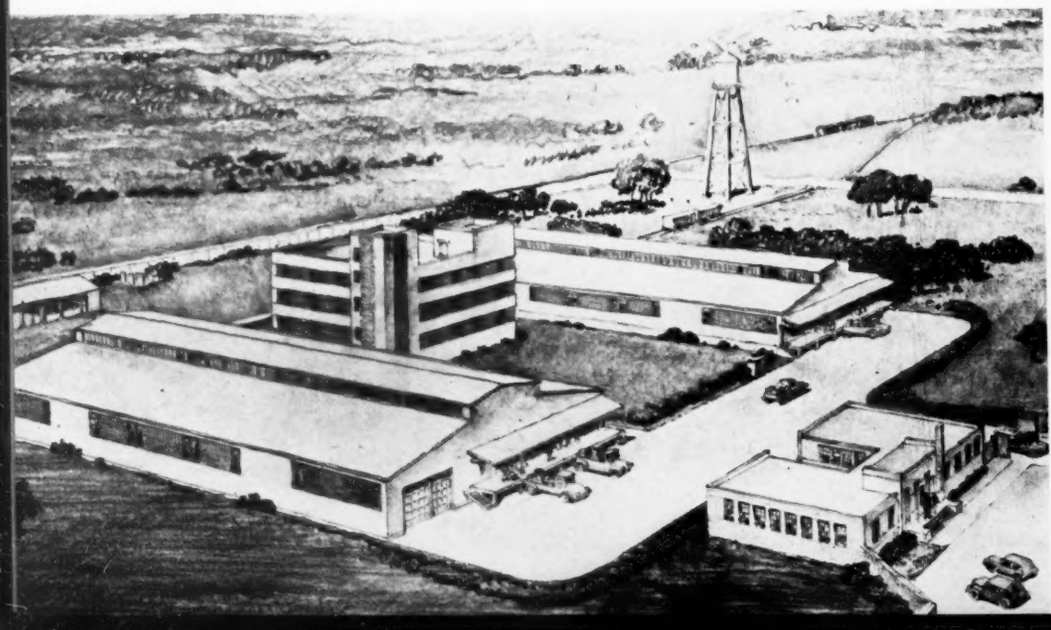
Wheeler McMillen (left), president, National Farm Chemurgic Council, is greeted by Rex Ryan at Ford Exposition, New York World's Fair. Mr. McMillen headed a large delegation of farm paper editors during Farm Press Day at Fair.

J. Oostermeyer has been appointed vice-president of Shell Chemical Company, San Francisco. Mr. Oostermeyer's previous assignments with Shell have called for residence in South America and the Orient.

Michael Cavallo was retired recently as head of the packing department of Heyden Chemical Company. After 25 years service, he was tendered dinner at the Astor, and presented with a gold watch, and white gold pin set with two diamonds.

Ned Brundage, for many years prominent in alkali circles with Michigan Alkali, who has just formed the Finger Lakes Chemical Co., Ithaca, N. Y. Associated with him is Charles S. Benjamin, also widely known in the industrial chemical field.

Architect's drawing of Pittsburgh Plate Glass plant at Houston, Tex., for which contract was recently let. Plant will be a complete unit, manufacturing a full line of paints, varnishes, and lacquers.



SHARPLES
TERTIARY AMINES

	TRIETHYL-AMINE †	TRI-n-BUTYL-AMINE †	TRIAMYL-AMINE † (mixed isomers)	DIETHYL-AMINO ETHANOL †	n-BUTYL DIAMYL-AMINE*	N-DI-n-BUTYL ANILINE*	BENZYL DIETHYL-AMINE*
COLOR AND FORM	COLORLESS LIQUID	VERY LIGHT STRAW LIQUID	LIGHT STRAW LIQUID	COLORLESS LIQUID	LIGHT STRAW LIQUID	LIGHT STRAW LIQUID	COLORLESS LIQUID
MINIMUM AMINE CONTENT	98.5%	99%	98%	99.5%	98%	95%	97%
MOLECULAR WEIGHT	101.1	185.2	227.3	117.1	213.3	205.2	163.1
SPECIFIC GRAVITY @20°	0.73	0.78	0.795	0.885	0.788	0.904	0.890
LBS. PER GALLON	6.1	6.5	6.6	7.36	6.56	7.53	7.41
DISTILLATION RANGE °C	85–91	203–219	215–260	158–163	229–241	267–275	190–200
FLASH POINT °F	20	187	215	135	200	230	170
REFRACTIVE INDEX @ 20°	1.4016	1.4328	1.4387	1.4414		1.5197	1.5002
SOLUBILITY IN WATER	SLIGHTLY SOLUBLE	VERY SLIGHTLY SOLUBLE	ALMOST INSOLUBLE	SOLUBLE	ALMOST INSOLUBLE	INSOLUBLE	VERY SLIGHTLY SOLUBLE
SOLUBILITY IN ALCOHOL	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE
SOLUBILITY IN PARAFFIN HYDROCARBONS	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE	SOLUBLE

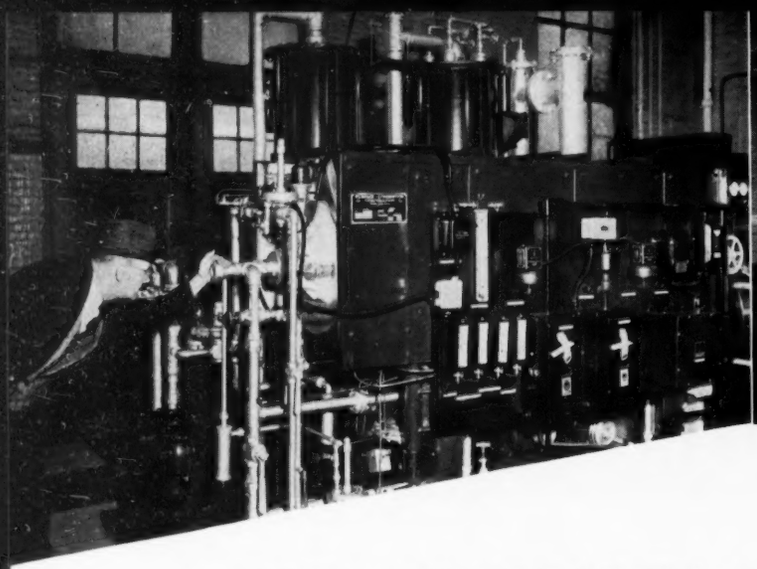
†COMMERCIAL PRODUCTS *SEMI-COMMERCIAL PRODUCTS

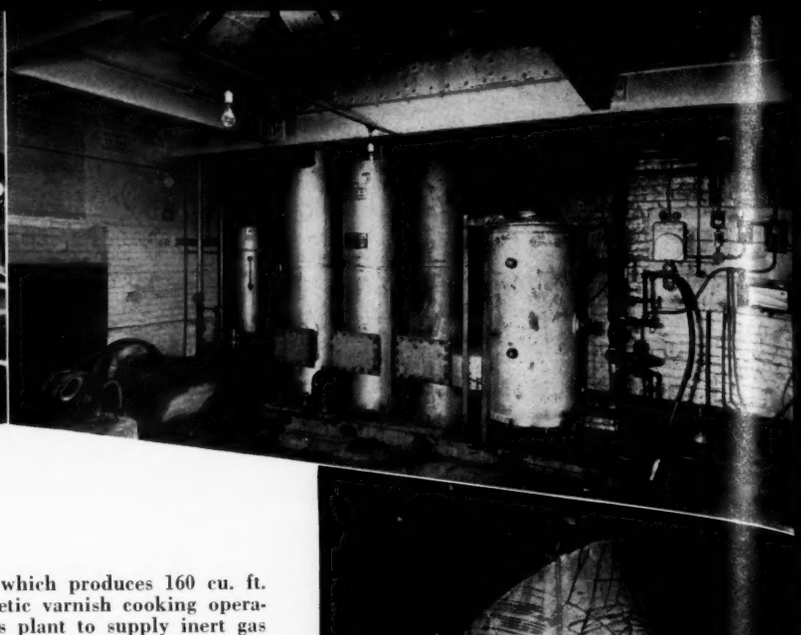
SHARPLES TRADE MARK SOLVENTS

Sharples tertiary amines are used in the manufacture of corrosion inhibitors, insecticides, quaternary ammonium bases, dyestuffs and emulsifying agents. Send for Sharples Catalog of Synthetic Organic Chemicals describing more than 125 new compounds.

The SHARPLES SOLVENTS CORP.

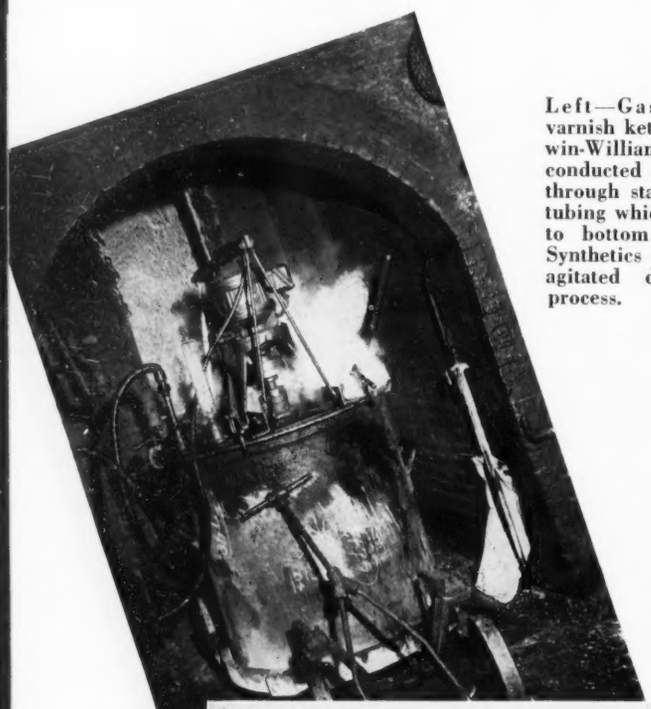
PHILADELPHIA • CHICAGO • NEW YORK





Above—DX machine at Glidden Paint & Varnish plant which produces 160 cu. ft. of natural gas per hour, used for "blowing" in all synthetic varnish cooking operations. Above right—Generating unit in Sherwin-Williams plant to supply inert gas for agitating and blanketing one third of plant's varnish production during cooking.

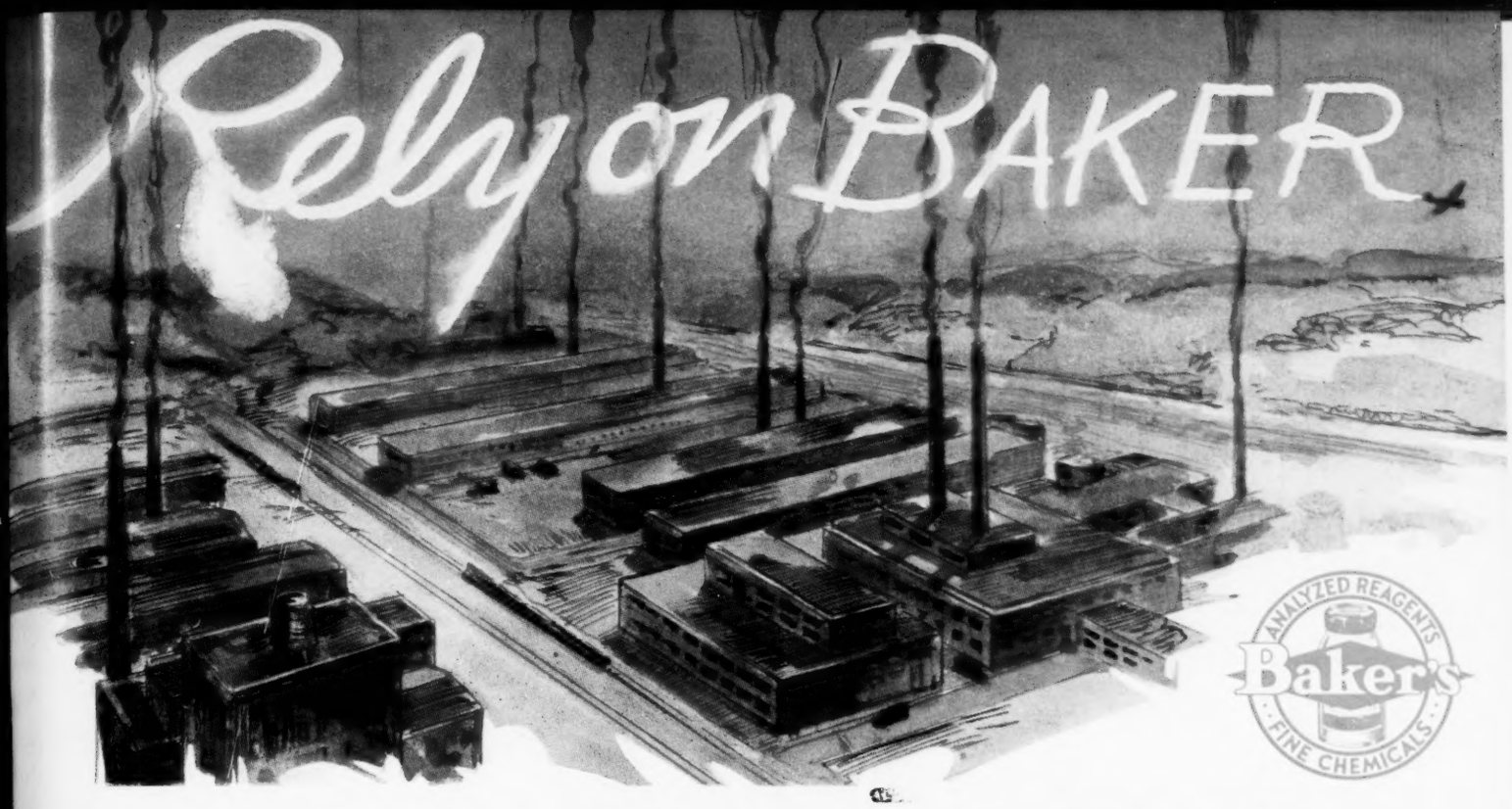
GAS IN PAINT PLANTS



Left—Gas "blown" varnish kettle at Sherwin-Williams. Gas is conducted into batch through stainless steel tubing which proceeds to bottom of kettle. Synthetics are motor-agitated during the process.

Right—Varnish cooker at Glidden plant. Note gas induction pipe at right. Cover merely rests on top of kettle, but in some cases it is clamped down. In most operations, gas bubbles through batch continuously.

Below—When plans for wider application of inert gas at Glidden plant are completed, gas from generator will be delivered to a 15,000 gallon horizontal tank (right foreground) where it will be maintained under pressure to be piped to varnish kettles.



For Tonnage Chemicals to Specification

If you need tonnage chemicals to special specification, look to Baker. We are particularly well equipped to manufacture chemicals which are used as raw materials in production, to the exacting specification required by the buyer. We have done this very thing for many industrial buyers with the result that their costs have been lowered and the quality of the finished product improved.

It is not unusual for a manufacturer to submit his entire problem to us. In cases of this kind we willingly contribute the combined knowledge of our Technical, Executive, and Manufacturing Staffs to the end that the customer's special requirements may be met.

Many of these special formula chemicals are manufactured under code number. In such cases, the names of these chemicals never appear on our records. We do this as a protection to our customer.

If you have special chemical requirements on standard or special specifications, we invite you to discuss in confidence your needs with a Baker representative. Or, if you prefer, arrangements may be made for a conference with a Baker executive either at your plant or at our offices at Phillipsburg.

You can rely on J.T. Baker Chemical Co. for industrial chemicals of a definite specification.

J. T. BAKER CHEMICAL CO., Phillipsburg, New Jersey

NEW YORK
420 Lexington Avenue

PHILADELPHIA
220 South 16th Street

CHICAGO
435 North Michigan Avenue

Baker's INDUSTRIAL CHEMICALS

FINE CHEMICALS
Mallinckrodt
SINCE 1867

MALLINCKRODT

STEARATES

The Product and Grade You Need For Your Specific Purpose

Average Analysis of M. C. W. Stearates

METALLIC SOAPS	FORMULA	BULK	WATER SOLUBLE SALTS	METALLIC OXIDE	SOFTENING POINT	*FREE ACID	WATER	STANDARD CONTAINER
	Approximate	Fl. Oz./lb.	%	%	Approximate °C	%	%	
Aluminum Stearate Technical M (mono-acid)	$AlSt(OH)_2$	56-62	1-2	15.5-16.5	170	3-6	0.8-1.2	50# box
Aluminum Stearate Technical D (di-acid)	$AlSt_2(OH)$	56-62	0.5-1.0	8.0-8.5	157	4-9	0.3-0.7	50# box
Aluminum Stearate Technical T (tri-acid)	$AlSt_3$	56-78	0.5-1.0	6.0-6.5	115	24-28	0.5-1.0	50# box
Calcium Stearate Impalp. Powd.	$CaSt_2$	120-160	0.2-0.5	abt. 9	146	0.5-3	0.1-0.9	50# box
Calcium Stearate Technical	$CaSt_2$	32-36	0.2-0.5	abt. 9	125	1-2	0.5-1.5	200# bbl.
Zinc Stearate U.S.P. XI	$ZnSt_2$	155-160	1.0	13-15.5	118	1.5-2.5	0.5-1	50# box
Zinc Stearate U.S.P. XI "S"	$ZnSt_2$	155-160	1.0	13-15.5	120	1.5-2.5	0.5-1	50# box

*Determined by hot extraction

Also available – Magnesium Stearate Purified Impalpable Powder, Flatting Agent No. 22, Sodium Stearate Technical.

Bottle or Barrel . . . Mallinckrodt Spells Quality

The scientifically standardized Mallinckrodt Stearates meet practically every common need in regard to bulk and chemical and physical characteristics. Inquiries on special problems pertaining to stearates are gladly answered.

MALLINCKRODT CHEMICAL WORKS

2nd & MALLINCKRODT STS. ST. LOUIS, MO.
70-74 GOLD STREET NEW YORK, N.Y.

CHICAGO PHILADELPHIA MONTREAL TORONTO

NEWS OF THE MONTH

GOVERNMENT

Defense Buying

SOME buying that can be traced to the National Defense Program entered the chemical market recently. It is strictly sotto voice, however, as nothing official is available at Washington.

One of the items showing up in Navy Department bids is mercury oxide. Bids are asked on considerable quantities of this mercurial. It is used in anti-fouling paints for ships bottoms. Large amounts are expected to be needed immediately for re-conditioning and new construction in the current naval expansion program.

It has also been learned that the government will buy toluol if the quantities available have a tendency to depress the market. While actual requirements on this item are a few months distant, some observers feel that the Defense Commission is taking a paternal interest in the market because of the ultimate importance of the material.

Such quantities as it is necessary to purchase in the near future will be stored until required, it was said.

There are also insistent reports that the Army is inquiring about sizeable quantities of quinine. While there has been some buying of this material for normal army use, present inquiries are said to be for greatly increased quantities. No orders have as yet materialized, however.

Taft Denounces Cartel

Despite a scathing minority report, legislation to carry out the Western Hemisphere cartel plan for agricultural products, was approved by the Senate Banking Committee. The plan was first announced by Secretary Hull at the Havana Conference in which all nations in the western hemisphere were present.

The bill which will come up for debate shortly, provides for a $500,000,000 fund to control marketing of products. This, the minority report condemned as "a grandiose plan to control the world price of commodities produced in North and South America."

Senator Taft, under whose leadership the report was drafted, called lending of money to Latin-American nations "futile, wasteful, and unwise." He declared the scheme would seriously injure the producers of South America and farmers of North America. Both Republicans and Democrats were represented in the minority group.

The House already has passed a bill increasing funds of the Export-Import Bank by $500,000,000 and authorizing it to make loans to Latin-American governments, their central banks, or, with government backing, to private institutions for bettering market conditions and developing resources. Thus, it can be said that the measure needs only Senate ratification, to release the fund.

The above photograph of Lieutenant Max Wells Williams was recently received by the American Flange & Manufacturing Co., Inc., whose London representative and Manager he was until entering his country's service at the commencement of the present hostilities. Lieutenant Williams is serving in the R.A.O.C. where his initiative and technical ability will no doubt be considerable of an asset.

Victor Gets Contract

U. S. Agriculture Department last month awarded contract to Victor Chemical Works for phosphates amounting to $630,480. Week before, the same company received a $300,000 contract for elemental phosphorus for Tennessee Valley Authority.

COURTS

Fertilizer Suit

Fertilizer companies being investigated by Winston-Salem, N. C., grand jury are still fighting tooth and nail to invalidate government seizure of their records seeking to uncover evidence of anti-trust law violations.

Late last month, Judge Hayes in a hearing on a motion presented by attorneys for Swift, and International Agricultural Corp., ruled that any evidence of violations uncovered in current probe may not be used in the event any appellate court rules invalid subpoenas requiring companies to submit their records. He also ordered that government probers must keep a record of each piece of documentary evidence examined.

In making his plea for the order, H. G. Hudson, attorney for International Agricultural, declared he wished his company to be in the same position, in the event subpoenas are ruled illegal, as it would have been if subpoenas were quashed before the six months old investigation started.

Corning Glass

Shortly after the successful culmination of a trademark suit brought by Obear-Nester Glass Co., Corning Glass will go to court to fight an anti-trust charge growing out of American patent rights to electric bulbs purchased from a Holland concern.

In the trademark suit, Obear-Nester charged that Corning's "Pyrex" mark was an infringement of former's "Rex" tradename. The two marks conflicted only on one item—nursing bottles. Obear-Nester's bottle, however, is a 5 cent item while Corning's is a heat-resistant bottle retailing at 25 cents. After a Federal District Court had upheld Obear-Nester's claim, the United States Circuit Court of Appeals in St. Louis dismissed the case on its merits, and barred a rehearing asked by the complainant.

The bulb case grows out of a clause in the contract signed by Phillips, the Holland concern, in disposing of its American patent rights to Corning. The contract stipulated that the Holland company must not export bulbs to this country while the 10 year document is in force. Government holds this is in restraint of trade.

GENERAL

Thomas Heads Hydrocarbon

Ross W. Thomas has been elected president and general manager of Hydrocarbon Chemical & Rubber Co., recently formed to manufacture synthetic rubber. Company was organized jointly by B. F. Goodrich Co., and Phillips Petroleum. Mr. Thomas is also general manager of Phillips' Philgas Division.

Dr. Waldo L. Semon, creator of Goodrich's two synthetic rubber materials, Ameripol and Koroseal was named vice-president and director of research. Herman P. Gangwer, of Goodrich's accounting department was named treasurer; Hy

Byrd, Phillips' assistant secretary, becomes secretary of the new company.

Directors of the Hydrocarbon company are Frank Phillips, chairman Phillips Petroleum; K. S. Adams, G. G. Oberfel, David L. Goodrich, Goodrich chairman; John L. Collyer, and T. G. Graham.

More Cuban Manganese

Cuban-American Manganese Corp. is increasing capacity of its plant at Cristo, near Santiago, Cuba, from 100,000 to 130,000 tons annually. Langbourne M. Williams, Jr., President of Freeport Sulphur of which Cuban-American is a subsidiary, said the move was made as a national defense measure.

Mr. Williams said that an important consideration in Freeport company's decision to develop low grade Cuban manganese ores 10 years ago was the knowledge that a large, nearby source of manganese was thus being established as an aid to national defense.

He pointed out that Cuba is only 90 miles off the U. S. mainland, that the Cuban sources are, in effect, domestic supplies and, in this connection, said that the Metals Reserve Company, an R. F. C. agency formed to acquire strategic minerals, has contracted with Cuban-American for from 25,000 to 65,000 tons of ferro grade ore annually in 1941-42-43.

No Magnesium Restriction

There is no restriction upon unlimited fabrication of magnesium metal into armaments for national defense or for industrial purposes in the United States, Wiser Brown, first vice-president and general manager of American Magnesium Corp., declared recently. The company buys all of the metals it fabricates from Dow Chemical.

Mr. Brown also denied Department of Justice assertions that there is German control of magnesium manufacture and fabrication through patents. American Magnesium, owned jointly by Aluminum Co., and General Aniline & Film, operates under American patents, quite a number of which were formerly owned by a German company.

Jackson Takes Cruise

David H. Jackson, vice-president, Croll-Reynolds Engineering Co., sailed on the *S. S. America,* recently for a twelve-day cruise to Haiti, Porto Rico, and Havana. Mr. Jackson, whose wife recently met an accidental death, was accompanied by his thirteen year old daughter Helen.

D. H. Jackson

A number of Mr. Jackson's friends and business acquaintances were at the pier when the boat sailed to wish him bon voyage.

Salesmen's Golf

Salesmen's Association of the American Chemical Industry held the second of its three annual golf tournaments Aug. 20, at Bonnie Briar Coutry Club, Larchmont, N. Y. Winners in the various divisions were:

Low net, class A, Charles Alexander, Seldner & Enequist; low net, class B, E. J. Boehm, National Aniline & Chemical Co.; members' kickers, D. L. Prior, Prior Chemical; second low net, class A, S. C. Moody, Calco; second low net, class B, Ray Giebel, Harshaw Chemical; members' kickers, C. W. Frost, Prior Chemical; guests' low net, J. B. Eakins, J. S. & W. R. Eakins; guest kickers, R. H. McCahan; members' low gross, Paul A. Dunkel, Paul A. Dunkel Co.; members' kickers, C. H. Slater, J. T. Baker Chemical.

Chemical Industries camera found this group waiting at the tee of the Bonnie Briar Country Club, Larchmont, N Y., where the Salesmen's Association of the American Chemical Industry held the second in its series of golf tournaments. Left to right are: "Sid" Moody, Calco Chemical; E. Wayne Haley, Columbia Alkali; Jack Leppart, Columbia Alkali, and "Lou" Neuberg, Warner Chemical.

Executives Visit Plants

Directors of Continental Can and a group of officials from its New York office, headed by Carle C. Conway, chairman, and J. F. Hartlieb, president, are on an inspection of company's plants, to gather information on which future expansion of facilities may be based.

Expenditures of $15,000,000 for expansion and improvement of its manufacturing, development, and research facilities are planned during the next two years. The expenditures will be allocated to various parts of the country, wherever it is determined that they will produce the greatest results through improved service and products, Mr. Conway declared.

Canada's New Plants

Immediate construction of 12 munition plants at a cost of $19,000,000 is projected by Munitions Minister C. D. Howe of Canada. Largest plant will be located "somewhere in Western Canada" where existing facilities are being extended to produce a large tonnage of ammonia and ammonia nitrate.

Construction work has begun on a plant to produce chemicals used in making smoke screens to be in operation in about four months. Another plant will produce bombs, one for chemicals required in production of gas masks; others will make glass and fire control instruments, and guns, and other war materials.

Luaces Opens Office

E. L. Luaces has established an office at 1107 Broadway, New York, where he will engage in patent practice in the fields of chemistry, metallurgy and engineering. Mr. Luaces was for a number of years associated wih General Norit Company, Ltd., West Virginia Pulp & Paper Company, and E. L. Luaces & Associates, and for five years supervised the engineering and patent activities of Acticarbone Corporation.

Priorities Features Printing

The fifth centennial of printing is the theme of the leading article in the September issue of *Priorities,* house organ of Prior Chemical Corp. The high rank attained by printing as an industry is noted, as is the fact that 1940 is an anniversary year for a surprising number of milestones in the development of printing and its allied industries.

American Zinc Buys

American Zinc Co. of Illinois has purchased a large electrolytic zinc plant at Monsanto, Ill., from Evans-Wallower Zinc Co. of Cardin, Okla. A modernizing plan to cost about $500,000 has been started by the new owner.

HEAVY CHEMICALS

Shipments Move At Accelerated Pace

Lack of Imports Helps Salt Cake—Chlorate of Potash, Oxalic Acid Remain Tight—Defense Buying Seen Few Months Off—News of German Delivery Guarantees In S. A. Confirmed

SHIPMENTS of heavy chemicals began moving at an accelerated pace during last week in August. First three weeks were routine summer business, although chlorine and calcium chloride went well, to lead the seasonal items. Paper, glass, and textile industries came into market late in month on a forward basis, and short items could be spotted here and there.

Lack of imports helped salt cake, increasing domestic demand. Chlorate of potash was not offered for spot, and oxalic acid remained in its tight position reported here for the past three months. Metal market weakness carried derivatives down a price ladder a rung or two, with no stimulation in buying. A looked for drop in lead derivatives due to slump in primary market did not immediately develop.

Important Price Changes

ADVANCED

	Aug. 1	Aug. 31
None		

DECLINED

Copper carbonate, 52-54%	$.1610	$.1570
Tin, metal	.52⅝	.50⅝
Tin tetrachloride	.25¾	.24¾

Alkalies In Demand

Alkalies were being taken in quantities which seemed to herald a "top drawer" final quarter. Most factors are on the optimistic side regarding the months coming up. Auto trade activity accounted for a real spurt in the acids.

There is considerable talk of a defense program speed-up. There naturally will be heavy chemical buying when orders finally begin to come through, but most responsible factors are not "counting their chickens" now. It still looks a few months off at least. What could easily be mistaken for defense stimulation is the healthy improvement in normal business. This upturn was due without any government stimulation. (See first paragraph, heavy chemicals market report in August issue.)

Exports insofar as Control Board operations are concerned are moving smoothly, and the next four months will be good, despite everything. Plenty of license blanks are available and shipments are cleared promptly.

German Plane Base

Probably the one most interesting phase of export market developments surrounds the news reported exclusively in this department last month that Germany was offering South American consumers cash bond guarantees on delivery dates. This news was confirmed in a number of quarters ten days after it was written here. Best reports are, however, that up to the present time, Nazi agents have signed up no business.

Background of the guarantees was not discovered until some days later. It was then reliably reported that hundreds of German engineers are in France's African possessions, building the world's largest seaplane base on the point of land projecting closest to South America.

South America has shown signs of life here and there. Shipping conditions also seem to have improved, with more space available which, naturally, means better delivery. Shipments of sodium sulfide, formic acid, are strong items. Spring planting beginning shortly has also raised a good call for agricultural insecticides. American factors have been running into some Japanese competition on latter item, however.

Some business is being booked for Shanghai, French Indo China, and Philippines. Formic acid for rubber trade, and alkalies for bleaching are in demand in that market with most inquiries specifying October and November delivery.

Dutch East Indies rolls right along, ordering supplies for its heavy rubber industry as though nothing had ever happened on the other side of the world.

Direct Phosphoric Production

Direct production of phosphoric acid from phosphorus was begun on July 29 in the new plant of the A. R. Maas Chemical Co. at Los Angeles. It is the first plant of its kind west of the Mississippi valley, as other producers of phosphoric acid have depended on the well known sulfuric acid method. The two processes do not serve the same field, for the newer phosphorus method supplies the demand for pure acid.

Industrial Editors Convene

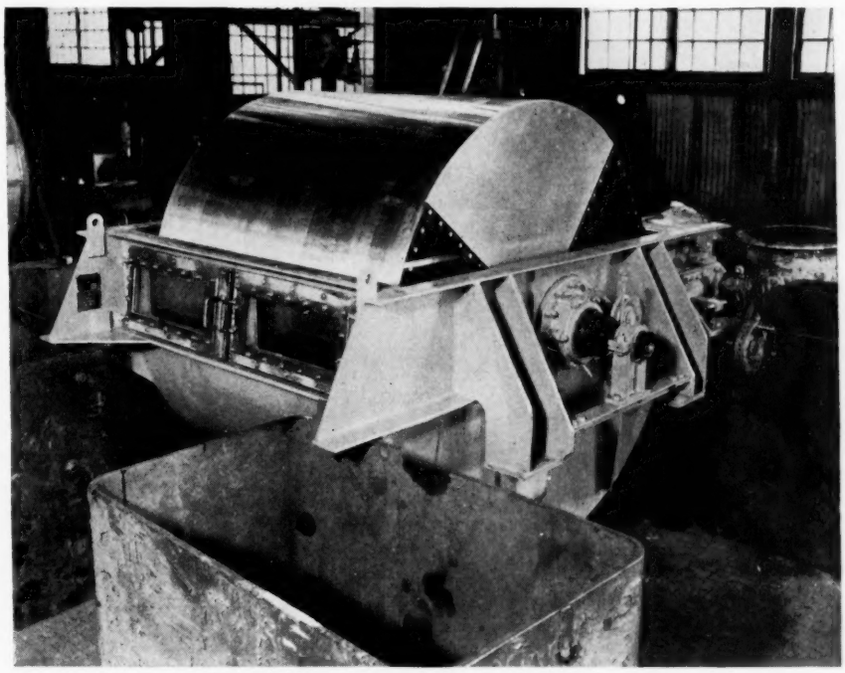
The first National Convention of Industrial Editors will convene in St. Louis on Oct. 13 for a three-day stay, it was announced today by Howard A. Marple, vice president of the American Association of Industrial Editors and general chairman in charge of convention arrangements. Mr. Marple is editor of Monsanto Magazine, published by Monsanto Chemical Company of St. Louis.

Rid-O-Moth Products

The Rid-O-Moth Corp., South Kearny, N. J., is now manufacturing paradichlorobenzene, orthodichlorobenzene and monochlorobenzene.

Hooker Builds Warehouse

Hooker Electrochemical Co. is adding a $23,000 warehouse at Niagara Falls.



A new flaking drum designed and manufactured by Blaw-Knox Company, Pittsburgh, Pa., provides an economical method of converting certain liquid chemicals into flake form. This equipment chills the liquid product on a highly polished stainless steel drum and scrapes off the flakes with an adjustable knife. Motor driven through a large gear and motoreducer the drum rotates in a pan containing the liquid material to be flaked and a coating is formed on the cold stainless roll. The cylindrical contact surface of the drum is highly polished so as to reduce the adherence of the material.

FINE CHEMICALS

Quinine May Advance Further

Optimism Is Keynote In Trade—Caffeine, Theobromine Still Unavailable On Spot—Navy Department Asks Bids on Mercury Oxide—Mercurials Steady as Metal Slumps—Exports Dead

BUSINESS in fine chemicals during last month was fair. Things will begin to hum on seasonal items this month. There was no advance buying of quinine, although all signs pointed to the price rise which came during period under review. As seasonal orders begin coming through in volume, it is entirely within the realm of possibility that prices will climb a bit more.

It is not hard to visualize a good final quarter in fine chemicals. If business holds to anything better than fair levels, good prices will naturally swell dollar volume. This better price structure has been a help during the sagging portions of the first half. Even though sales dropped off, dollar volume was pleasantly out of proportion to the contrasted tonnage totals.

Although Navy Department officials will not even whisper about it, orders for sizeable quantities of mercury oxide have been coming into the market from Washington. This material is used in paint for ships' bottoms and with the present naval repair and expansion program in full swing chances are that this business will continue.

The primary market slipped off a few dollars more during August. Mercurial prices, however, will not follow for some time. Most mercurials, corrosive sublimate, oxide, etc., run 80 to 90 per cent. mercury, and with good demand, it is unlikely there will be any drop in manufactured prices.

Production Increasing

Production of mercury in the U. S. has steadily increased during the past six months. It is now estimated that normal requirements can be met for both domestic and Canadian consumption. Mining costs for this metal, however, are not to be compared with import material prices which "made the market" when the seas were free.

Under normal conditions, a good drop in price could be looked for when production began to catch up with demand. But best opinion is that it will be an abnormal market until Spanish or Italian material is again made available.

Caffeine and theobromine are still greatly in demand for export. Supply on these items, however, is on a "ration" basis for domestic consumers. None of it is reaching docks.

Exports are good, with South America as leading buyer.

Important Price Changes

	Aug. 1	Aug. 31
ADVANCED		
None		
DECLINED		
Acid, Ascorbic	$2.25	$2.00

Turner Currens Honored

The Drug, Chemical and Allied Trades Section of the New York Board of Trade in cooperation with the many other friends of Turner F. Currens, for many years Vice President of the Norwich Pharmacal Company, Norwich, N. Y., will honor him at a testimonial dinner to be held at the Hotel Pennsylvania on Thursday, Sept. 19, 1940, at 7 P. M. On Sept. 1, Mr. Currens retired as Vice President of the company after more than thirty-six years of service. He will continue as a Director.

Dr. Ralph E. Dorland, Eastern Sales Manager of the Dow Chemical Company heads the dinner committee.

Monsanto Expansion Moves

Monsanto Chemical Company has completed the purchase of all but two lots in two square blocks of property adjoining the west side of its St. Louis plant. The total purchase involved 33 separately owned pieces of property.

Company has also begun work on engineering plans preparatory to construction in the Detroit industrial area of a manufacturing plant. Preparatory to the starting of this project, a tract of 138 acres was purchased.

Lot-O-Lem, a lemon juice substitute marketed by the California Fruit Products Company of New York, is being sold in many additional markets this year, officials of the company report. It is packaged in special eight-ounce bottles manufactured by Owens-Illinois Glass Company and bears a label printed by Empire Lithograph Company.

Dow Financing

Seven investment banking firms headed by Smith, Barney & Co., will underwrite the $15,000,000 offering of term and serial debentures of the Dow Chemical Co. The financing will consist of $7,500,000 of ten year 2¼% debentures due on Sept. 1, 1950, and $7,500,000 of one-to-ten year serial debentures.

The group and total participations are: Smith, Barney & Co., $5,500,000; Dillon, Read & Co., $1,750,000; the First Boston Corp., $1,500,000; Harriman Ripley & Co., $1,500,000; Kuhn, Loeb & Co., $1,750,000; Lee Higginson Corp., $1,000,000; and Morgan Stanley & Co., Inc., $2,000,000. Each underwriter divided its participation equally between the two issues.

Mercury Stolen

The mercury distilling plant of F. W. Berk & Co., in Wood-Ridge, N. J., was visited by thieves on Sept. 7. The robbery was committed at an early morning hour by blowing open a vault containing $22,800 worth of mercury. The 120 flasks which weighed about sixty pounds each were loaded on a truck taken from the company garage. No trace of the truck or mercury has yet been found.

Chemists' Club Scholarships

As the plan worked out so well last year, the Chemists' Club has again awarded one-year junior memberships to young men who received degrees in chemical engineering or in pure chemistry this June. These awards were based on scholarship and were open to candidates from fifty-two colleges and universities throughout the country.

Group Insurance Plan

Nearly 300 employees of Cliffs Dow Chemical Company, Marquette, Mich., are cooperating in a group insurance program. The plan includes life insurance, totaling $290,000, and sickness and accident coverage, supplemented by hospitalization and surgical operation benefits.

Chain Belt Moves Branch

Chain Belt Company announces the removal of its Minneapolis office to 1645 Hennepin Ave. At the new address, the company will have a much larger space and increased service facilities.

COAL TAR CHEMICALS

Business Begins Moving Upward

Government Offers to Buy Toluol Which Might Weaken Market—Would Store It Against Future Use—Canadian Munitions Activity Another Strong Factor—Benzol Market Very Slow

COAL tar business began to move upward during the latter part of August, after remaining practically somnolent during the first two weeks. A pleasant surprise for toluol producers was word that the government will take any quantities pressing on market and store it against future needs. There has been no actual ordering, and the best it offers is assurance that the price will remain where it is now.

Another bullish factor as far as this material is concerned, is Canadian building of munition plants. There is no Canadian production adequate to supply anything like the requirements that begin to shape up for the future. Whether U. S. production will be able to cope with these quantities before new oil process material becomes available is a question. It is known that there was an inquiry in the market for 1,000 tons during period under review. Best information is that it went unfilled.

Important Price Changes

	Aug. 1	Aug. 31
ADVANCED		
None		
DECLINED		
Benzol	$.15	$.14
Cyclohexane	.25	.17
Cyclohexanol	,30	.26

Lacquer Trade Orders

Lacquer trade is ordering again. This further complicates the picture. So, it would seem that lack of export markets will not prove as distressing as at first believed. Of course, there is no 60 cent business kicking around, but major factors are doing the business they were set up to do and are pleased with this turn of events. Most of the former 60 cent material came from the wrong places.

Very depressed is benzol. Speculators caught in the squeeze have knocked the market to smithereens. The saddest feature of the whole situation is that distressed benzol is "making the market." This came into the hands of present holders when certain quantities of benzol had to be taken with spot toluol. In some cases storage and demurrage charges on it ran to $50 and $60 a day. Under those conditions, and with by-product production having spurted, the picture looks very dismal.

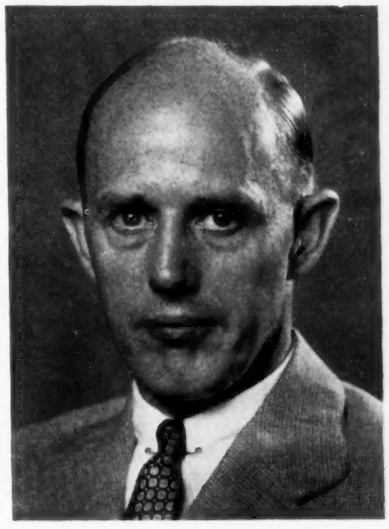
Xylol made a showing slightly better than early summer, though business here, too, is no better than fair. Production is running ahead of demand, and while prices are "officially" holding, there are sales being made below the market.

Exports are dead. South America has gone flat as a buyer. So as far as exports of coal tars are concerned, it looks as though Canada will not only be our good neighbor, but our best customer to boot. Japanese material can move, the State Department has ruled. But there is little business passing.

OBITUARIES

Edmund C. Turner, 53, assistant vice-president, Air Reduction Co., died in Colorado Springs, Colo.

Mr. Turner was graduated from Penn State in 1911, and entered the chemical industry during the first World War, when he was assistant to Herman Van Fleet, in building the government nitrogen plant at Muscle Shoals, Ala. When Mr. Van Fleet joined Air Reduction as chief engineer, he appointed Mr. Turner his assistant.



Edmund C. Turner

William A. Converse, 77, former secretary of Dearborn Chemical Co., and donor of William Gibbs Medal, died in Chicago.

Mr. Converse became chemical director of Dearborn in 1897 and was named secretary in 1909. In 1924, he was given the position of chemical director and general director of sales, duties he discharged until his retirement in 1928.

Other Deaths

Ernest W. Maughlin, 60, president and manager, Termite Dead Oil Laboratories, died in Columbus, Ohio . . . Francis K. Williams, 73, founder of Sterling Bag Company, Brooklyn, died at his East Orange, N. J., home . . . Montgomery Stagg, 88, president, Worcester Fertilizer Company, died in Snow Hill, Md. . . . Charles Burr Andrews, 77, founder and former secretary-treasurer, Brooklyn Varnish Manufacturing Company, is dead.

A. D. Geoghegan, 63, president, Southern Cotton Oil Company, died following a heart attack . . . Everett P. Brewer, sales manager, Olds & Whipple, Inc., died recently . . . E. L. Lippitt, 65, retired district manager of Colonial Salt Company, died in Atlanta . . . F. Huttig, 68, president, Huttig Lead & Zinc Company, Kansas City, is dead . . . John C. McNulty, 74, father of Joseph A. and Frank B. McNulty, dealers in earth colors, died at his Brooklyn home . . . Max Pick, 62, treasurer and director of L. Sonneborn & Sons, Inc., died at his summer home in Easton, Conn.

Chemical Section Plans

Opening a busy Fall program for the Drug, Chemical and Allied Trade Section of the New York Board of Trade, Dr. Ralph E. Dorland, eastern sales manager of the Dow Chemical Company and chairman of the Section, announced a general luncheon of the section to be held at the Hotel McAlpin, at 12:30 p. m., Thursday, September 19. Speaker at the luncheon meeting will be Walter J. Quinlan of the Prophylactic Brush Company, who will speak on the interesting subject "Value of Industrial Organization."

Special plans have been formulated for the Annual Skytop party of the Section, which will be held this year on Oct. 18 and 19. A special car has been reserved on the Lackawanna for the afternoon of Oct. 17, and an informal cocktail party will take place at the Skytop Lodge on that evening. Members and friends of the Section and their wives are invited to attend the Skytop party. Further details of the program will be announced in the next issue of CHEMICAL INDUSTRIES. Reservations are now being taken for the party by John C. Ostrum, secretary of the Section.

Phillips Offers Propylene

Phillips Petroleum Co., Philgas Division, is offering technical propylene on a guaranteed 95 per cent. basis.

Pittsberg Transfers

The Pittsberg Chemical Co. has transferred its sales and accountiing headquarters to the Los Angeles office.

SOLVENTS

Producers See Heavy Buying Ahead

No Price Changes Seen Until Year End—High Solvency Naphthas Borrow Strength From Toluol Tightness—Industrial Paint Manufacturers Buying—Acetone Moving Well—Alcohols Good

SOLVENTS began moving in quantity toward the end of August, giving promise of big things to come. Beginning of August didn't measure up to poor July business. However, according to most factors that is just a memory now.

Expectations are that balance of the year will show better than first quarter, although it is not expected to reach levels of '39 fourth quarter which was colored by war scare orders.

Pricewise there is little likelihood of a change until the new year, although with demand accelerating at such a rapid pace, this is one prediction we cannot guarantee.

High solvency naphthas have been moving in sizeable quantities because of tightness in toluol. Solvents replacing this scarce material have been going to lacquer people in bigger and better volume. Automotive buying came in just as predicted.

Industrial paints have taken alcohols in nice quantities and seem to be underway for the new season. Paint industry on the whole, however, has remained disappointing. All the alcohols were in good demand during latter part of period under review. Butyl, ethyl, and ethyl acetate received good calls.

Acetone Moves Well

Acetone continued to move well against contracts. But dealers holding material bought for export and beached by the blockade are trying to get out from under, thus shading a small portion of the market. Material is now in better supply, with production adequate for all needs.

Exports are moving to Great Britain and Canada, but exports today are not a factor. South America has given no indication of taking up any slack. Latter, however, never was a heavy buyer of solvents.

Important Price Changes

ADVANCED

	Aug. 1	Aug. 31
None		

DECLINED

None

Otto Construction Office

Otto Construction Company has established offices at 500 Fifth Ave., New York City, for the building of the Otto Coke Oven and Otto equipment for by-product recovery and treatment.

Carbide Units Exhibit

A number of Units of Union Carbide and Carbon Corporation, including The Linde Air Products Company, Electro Metallurgical Company, Haynes Stellite Company, and National Carbon Company, Inc., Electrode Sales Division, will be represented at the National Metal Exposition to be held in Cleveland at the Public Auditorium from Oct 21-25.

Columbia Textile Courses

Textile chemistry, fabric design, and the manufacture and marketing of textiles, including cotton, rayon, spun rayon, and woolens and worsteds, will be studied in the Extension Division of Columbia University during the Winter Session beginning Sept. 26. Chemistry's part in textile processing will be dealt with in lectures and laboratory work directed by Arne K. Gyzander of the National Aniline and Chemical Company, New York.

Morton Chemical Expands

Morton Chemical Co. has instituted an expansion program with a view to manufacturing materials for trades other than textiles. Facilities of the company's plant at Greensboro, N. C., already one of the largest in the south manufacturing organic specialties, will begin shortly. A new issue of $100,000 preferred stock has been approved.

Company is also opening a branch office in Woodside Building, Greenville, S. C., under the direction of Robert E. Buck.

Plastics Travelcade Moves

The Bakelite Plastics Travelcade will open on Oct. 1 in the Museum of Science and Industry, Chicago. The exhibit of modern plastics was at The Franklin Institute, Philadelphia, for six months.

Standard Enameling Builds

Standard Enameling Co. is adding four buildings to its plant in Los Angeles.

PIGMENTS AND FILLERS

Producers Find Trade Improving

Paint Pigments Seasonally Better—Zinc Oxide Manufacturers See September As Year's Best Month—Casein Continues Slow But Price Holds—Dry Colors, Carbon Black In Good Demand

IN general the paint materials market has improved somewhat during the past few weeks. As reported last month construction and industrial activity which has been advancing steadily should have begun to make itself felt in sales of paint materials. As yet this stimulus has not been noticeable to a very great extent but there are a few indications that increased activity over the summer dullness may be under way.

Producers report that shipments of several paint pigments are seasonally better now that the fall painting season is ready to begin. Lead and titanium pigments are moving out at a seasonally advanced pace and zinc oxide manufacturers expect that this month will be one of the best this year. Although the price of slab zinc was increased sharply the first part of the month, prices of zinc pigments have not as yet been revised to follow.

Casein continues to move out at a slow pace and at about the same price. Domestic production is rather low as the raw material, milk, is being diverted to other products, notably dried and condensed milk for which the war has caused a brisk export demand. However, producers claim that they are having no difficulty in acquiring their needs for the manufacture of casein.

Important Price Changes

ADVANCED

	Aug. 1	Aug. 31
None		

DECLINED

Aluminum paste	$.62	$.61
Litharge	.0675	.0640
Lead, red	.0775	.0740

Imports of casein were up sharply during June amounting to 3,192,318 pounds, of which 3,081,868 were from the Argentine. It is understood that there are still large supplies in South America and it is quite likely that continued heavy shipments here would cause a break in the price.

Trade in dry colors has been fairly active with carbon black getting special attention. Some of the interest in this pigment comes from the tire producers, and the export trade. However, consumers on the whole who stocked up last June before the price increase are now back in the market for additional supplies.

RAW MATERIALS

Small Quantity Orders Widen Market

Chinawood Seen as Object of Curiosity—Small Supply Keeps Market Strong—Edible Oils in Good Position—Linseed Buyers on Sidelines—Naval Stores Up—Turpentine Price at New High

THERE was a slight improvement in market for raw materials during last week in August. The buying field widened, although quantities per order were small. "Nearby volume" is the way sellers described it. Consumers seem to be buying from day to day, which bespeaks confidence that the market will stay where it is or lower, for the immediate future at least.

Chinawood remained an object of curiosity. While little business passed, there was, during period under review, a wide inquiry which was taken to mean that buyers were marking time, but keeping in close touch with the supply situation. Material is tight, with few offerings on spot material. Little could be found among independent importers.

Chinawood tightness seemed to govern market. Despite few actual orders, price rose fractionally because of small stocks.

Linseed buyers are playing the waiting game. Market is complicated by new flax season, plus the break in Argentina flax prices. Official fixed minimums were removed in mid-month, and there is danger of it coming north at low levels. Estimates of a bumper crop seemed to be discounted, except for slow buying. Price picked up fractionally after weakening when the government estimate was issued during July.

Edible Oils Firm

Edible oils firmed up. Soybean ran up on both crude and refined. Corn oil also showed strength but not to the extent of soybean.

Naval stores on the Savannah Exchange showed a healthy rise, although business was, on the whole, disappointing. Turpentine closed at 30½c in barrels, the highest point the market has reached this season. Rosin also ran up week by week.

Strength was a reflection of the withdrawal of C.C.C. material from distributors under a new policy which became effective Aug. 12. C.C.C. officials feel that the time has come for a bit of regulation to keep the market off bottom. Under the new rules, each contracting distributor must make a report of his gross and net inventories. The government will be in a position to determine whether stocks being held are reasonably commensurate with their sales.

Contracting distributors can draw from 30 to 60 per cent. of their sales of rosin at distributor's option, but discount on 1938 rosin is cut from 30 cents on 280 lbs.

Important Price Changes

	Aug. 1	Aug. 31
ADVANCED		
Oil, Chinawood, tanks	$0.24¾	$0.25
Oil, coconut crude	.02⅞	.02¾
Turpentine, spirits	.32¾	.36½
Carnauba	.58	.70
DECLINED		
Acid, stearic dist., double pressed	.09¾	.09
Triple pressed	.12½	.12
Linseed, raw	.083	.078
Peanut, crude	.06	.05⅞
Tallow extra loose	.04¼	.03⅞
Wax, bees, Brazilian	.26	.25½

(the former Savannah unit) to 5 cents per 100 lbs. on the new basis. The government feels that when distributors have only 5 cents with which to change over 1938 rosin from 280 to 100 lb. packages, they will purchase more of the 1940 production in the open market bringing about a higher market.

Fly in the ointment insofar as turpentine goes, is possibility the stocks being held by various factors waiting for better prices may reach the market all at once. Light offerings for past month have been taken from day to day, although volume was not of the type to raise eyebrows. Thus, if withheld stocks are dumped on the current price bulge, there are grave, well founded fears, that prices will weaken.

Naval stores exports were extremely light. South America has had inquiries in the rosin market, but little business was consummated. Some turpentine was shipped to Liverpool, but not enough to be of consequence. Some speculation is rife concerning the turpentine storage tanks in London. Situated as they are on the river front, it is felt they present natural targets for enemy fliers. No reports on stocks held in these tanks have reached the market yet.

Penn Salt Product

Pennsylvania Salt Mfg. Co. is now manufacturing "Kalo," a fluorine agricultural insecticide.

Naco Opening Plant

Naco Fertilizer Co., formerly known as Nitrate Agencies, Inc., will shortly open a plant at Findlay, O.

Mixing Plant Established

A ground phosphate rock and nitrogen and potash mixing plant has been established by M. H. Scivally, Columbia, Tenn.

AGRICULTURAL CHEMICALS

Ammonia Sulfate Buyers "Wait On Line"

Chilean Bag Prices on Nitrate of Soda Raised 50c Oct. 1—Domestic Producers Make no Announcement—Serious Scarcity Feared Due to Lack of Imports—Potash Production Expanded

SULFATE of Ammonia continues to highlight the agricultural chemical news. Deliveries are being made on contract against production, with consumers "waiting on line" for material. Because of production, not because of demand, withdrawals show a decline as compared with last year.

Many spot inquiries are going begging. Good demand for export at "any price" finds no material available from major producers, though some quantities are reported to be reaching piers.

Secondary interest prevails in nitrate of soda. Chilean bag prices go up 50c October 1, but no definite price change has been decided upon by U. S. producers. Bulk material remains unchanged, with contracts signed to run until June at $27.

Uncertainty regarding European situation has buyers marking time. If the squeeze on imports is retained, one factor predicts, things will get much worse before they get better as far as supply is concerned.

Important Price Changes

	Aug. 1	Aug. 31
ADVANCED		
Blood, imp.	$2.30	$2.45
Tankage, imp.	2.50	2.60
DECLINED		
Fish scrap	$3.60	$3.20

The blockade of Europe is expected to firm up some minor items. South American slaughter has been curtailed by about 50 per cent. If this rate is maintained, sellers of blood, tankage, bone meal, etc., will be as happy as the steers.

Potash is due to tighten. According to best sources, warehouses of importers are now bare. Some new business is being booked but sellers are cautious in making commitments. Production is being expanded on a moderate scale, but buyers are worrying over missing the early buying discounts because of delay in acceptance of their orders due to short supply.

Minor fluctuations during past month are shown in box.

(*Continued from page 264.*)

sections of its bill which changed the Internal Revenue Code with respect to limitation on assessment and to abatement and refund of taxes so as to embrace not only the excess profits tax but a war-profits tax in these sections.

National defense continued to hold the center of the stage on all fronts of the legislative scene. It is significant that the House passed the tax bill without a roll call and that on the same day the Senate passed a five billion dollar defense appropriation bill also without necessity of a roll call.

The supply of money and contract authorizations by Congress has not only kept pace with the Executive requests but has been in excess of them. But many questions of policy in regard to the expenditures of this supply have not been determined.

For several months, for example, the Army vacillated in a decision regarding nitrate plants and similar projects related to the chemical industry. It took weeks for it to settle upon the process to be adopted. And then came the question of location of ammonia plants which, in the aggregate, will cost approximately $20,000,000, and according to Major General C. M. Wesson, Chief of Ordnance of the War Department, it is expected that it will require about a year to tool and otherwise equip ammonia plants, TNT plants and powder plants, and that production in none of these can be expected for from ten to fourteen months.

And, in the Tennessee Valley, where it had been anticipated that a number of defense plants would be located because of proximity to raw materials and also the public electric powder facilities of the TVA, difficulties arose because of, strange as it may seem, power rates sought by TVA. It was necessary to make compromises on both sides before any part of this difficulty could be ironed out. What happened in regard to this governmental power agency was that several years ago TVA made a contract with the Aluminum Company of America at its Alcoa, Tenn., plant, to deliver firm power at $24 per kilowatt per year with a considerably lower rate for secondary power. Thereafter TVA discovered that a more equitable rate for its prime power for manufacturer enterprise would be $30 per year. However, some of the private industry seeking location in the area of TVA thought $30 a year too much in view of the known fact that the Aluminum contract was for $24. TVA, however, has a new contract with the Aluminum Company effective in 1945 which will raise its prime power rate to $30 and it finally induced some of the new enterprises to accept a rate of $27 where no long transmission was involved. TVA is going to revise its rate with the several chemical companies using its power upward to an effective figure of $27 per kilowatt year as soon as present contracts expire.

Elasticity in regulations for carrying explosives by water is provided in a compromise bill which is headed for enactment. This subject has been before Congress for many months and the bill on the subject has been rewritten several different times. Under the proposal which appears to be destined to go on the statute books, there would be rather wide authority given the Secretary of Commerce, through the Bureau of Marine Inspection and Navigation, to make regulations for transporting explosive and other "dangerous cargoes." Revision of the old law under which authority was divided between the Bureau and the Interstate Commerce Commission was sought by numerous port authorities.

Foreign Literature DIGEST

By

T. E. R. Singer

BUMAZHNAYA PROM. (PAPER INDUSTRY), Vol. 17, 1939.

No. 1, *p.* 23—N. F. Chepelev reports on a special paper used for the electro-mechanical recording of sound. This is a new technical grade which should be investigated further and used experimentally in the moving picture industry. It may also be used for recording in certain control-measuring apparati. Such paper has the following requirements: the basic paper should have a density of 35-45 g., with a sizing of 2 mm.; it should be covered with wax by a direct method; after treatment with talc the paper is colored black (with India ink) with a minimum quantity of adhesive substance (casein) since less adhesive increases the sensitivity of the colored layer; analogous pigments of a different color should be used; diagrammatic squares should be made on the colored paper. the process involving the covering of the paper with talc and pigment should be mechanized. The preparation of such paper is described.

No. 2, *p.* 25-31—According to M. I. Uetski little has been done as yet on the problem of waste water disposal from paper mills in the USSR. 250-350 cu.m. of water is utilized per ton of unbleached cellulose produced, and 350-450 cu.m. of water per ton of bleached cellulose. 200-300 cu.m. is used for high grade papers. This amounts to 2-3 times as much as the quantity used in America. The writer discusses ways for reducing the quantity of fresh water used and therefore the waste water, by reusing the water in different operations. The water has to be tested for pH, etc., and the fibers filtered out before it can be reused. The Leningrad Industrial Institute experimented on removing (by settling) fiber from waste water by the use of ultra-sound waves. The most harmful constituents of waste waters the liquors (alkali) from sulfite cellulose plants. The sulfite liquors contain lignin, hemi-cellulose, tar, etc. The first Russian plant utilizing these liquors for the production of alcohol was established in 1935 at the Syask Cellulose Plant. 1200 cu.m. of liquors were treated per day at this plant and 270 thousand decaliters of 96° alcohol were recovered. Another such plant was established in 1938 at the Kamski Combine. 10-12 liters of alcohol are recovered from 1 cu.m. of liquors. Since only a small part of the organic content of the liquors are utilized, production of alcohol does not solve the problem of disposal of such waste water. The Central Laboratories for Scientific Investigation of the brewing industry of Narkomestprom developed a successful method for production of yeast from liquors and a plant will soon be erected at the Kondrovski Cellulose Paper Combine.

According to P. Assman and L. Schlecht in *Metallwirtschaft*, 1939, *22*, p. 467, it is now possible to cover a considerable part of the German nickel requirements by using nickel carbonyl $Ni(CO)_4$ in powder form instead of nickel metal for obtaining pure nickel, various nickel alloys, etc. The use of the carbonyl for such purposes as nickel-chromium alloys, special brasses and bronzes with a nickel content, copper-nickel alloys, and nickeliferous aluminum, is said to be much cheaper than using nickel metal for such purposes, and the products are claimed equally satisfactory.

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

September ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1940

Ethyl and Butyl Alcohols Used in Replacing Toluol

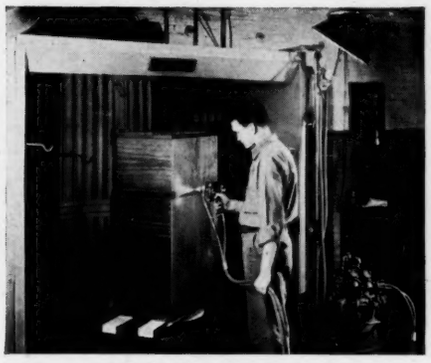
Offer Opportunities for Low-Cost Formulations in Toluol Shortage

Ethyl alcohol and butyl alcohol have interesting possibilities in the reformulation of lacquers in the current shortage of toluol and toluol substitutes, it is reported.

A number of lacquer manufacturers have already substituted ethyl alcohol and butyl alcohol for a substantial part of the toluol in their formulations, it is said. The qualities of the reformulated lacquers are considered to be comparable with those formulated with toluol or its substitutes, and it is possible to effect savings in costs, in view of the rising prices of toluol.

Only small amounts of butyl alcohol are

(*Continued on next page*)



High quality lacquers for economical finishing require the highest quality of ingredients. Continuous large-scale production processes at U.S.I. assure purity and uniformity of such essential materials as Amyl Acetate, Normal Butyl Acetate, Ethyl Acetate, Normal Butyl Alcohol, Dibutyl Phthalate, and Solox.

U.S.I. Pure Alcohol Exceeds Users' Rigid Specifications

Because U.S.I. Pure Alcohol exceeds U.S.P. standards, it is specified by an increasing number of users for drug and pharmaceutical purposes, food extracts, as well as for medical and scientific research.

Sales of Pure Alcohol, therefore, have shown a steady improvement in the last few years. U.S.I., the oldest and leading producer of Pure Alcohol, is in a position to meet all the requirements of its customers. Ample stocks of Pure Alcohol are maintained at conveniently located U.S.I. warehouses in important centers throughout the country; and the U.S.I. field organization is specially equipped to serve this class of trade.

Zinc Dust-Zinc Oxide Pigments Display High Protective Value

ELLSWORTH COUNTY, Kans.—Pigment combinations of zinc dust and zinc oxide have high protective value in coatings for tanks used for highly corrosive crude oils, it is reported as a result of tests conducted here.

It is said that the pigment tested consisted of 80% zinc dust and 20% zinc oxide, and that the coatings showed little damage after testing for one year.

U.S.I. Products Important in Relation to National Defense

Alcohol, Acetone, Many Other U.S.I. Chemicals Are Vital Raw Materials in Major Phases of National Rearmament Program

As the progress of national defense plans makes increasing demands on raw material sources, U.S.I.'s extensive facilities for the production of alcohol and alcohol-derived chemicals are expected to play an important role in the successful execution of the program. Since alcohol is one of the essential chemicals in almost all phases of industrial production, large quantities will be consumed in meeting defense needs.

In munitions manufacture, alcohol is extensively employed as a dehydrating agent in the manufacture of nitrocellulose; as a wetting agent in treating nitrocotton for safe storage and transportation; as a solvent for nitrocellulose in making gelatin dynamites and smokeless powder, and as a reactant in making fulminate of mercury.

Other Uses of Alcohol

These applications represent only a few of the more obvious uses. It is used also in compasses, gauges, thermometers and barometers and in other indicating devices for aviation and marine service. Substantial quantities will be needed for making anesthetics, antiseptics, drugs, liniments, lotions, and rubbing agents. Moreover, alcohol serves as a dehydrating agent in making photographic negatives, prints, and plates, and as a solvent in making photoengravings — important factors in the preparation of plans. The metal-working industries will require large quantities of soluble cutting oils made with the aid of alcohol. Still other uses of alcohol include antifreeze and fuel for automotive engines.

Alcohol-Derived Chemicals

Among the alcohol-derived chemicals manufactured by U.S.I., acetone has many defense uses. It serves as a solvent in making cordite, airplane dopes, varnishes, and photographic films and plates. The manufacturers of rubber, leather and textiles—all of which are essential in the defense program—use acetone in a variety of ways.

Among the many other U.S.I. products es-

(*Continued on next page*)

New U.S.I. Intermediate For Pyrazolon Dye Group

Ethyl benzoyl acetate, an intermediate in manufacturing dyes of the Pyrazolon group, has been added to the list of U.S.I. products. It is available in 55-gallon returnable drums, 5-gallon non-returnable cans, and 1-gallon non-returnable bottles.

Ethyl benzoyl acetate is prepared by allowing ethyl acetate and ethyl benzoate of high purity to react with metallic sodium. The sodium derivative is formed first and ethyl benzoyl acetate is liberated by the addition of dilute acid. The crude ester is separated and purified by vacuum distillation.

Full information on the properties of ethyl benzoyl acetate may be obtained by writing U.S.I.

The chief properties of many of the most important solvents produced by U.S.I. are tabulated in handy form in a new data sheet. Properties given include blush resistance, boiling range, dilution ratio, evaporation rate, flash point, and viscosity. Copies of this data sheet may be obtained free of charge by writing U.S.I. Ask for Bulletin PS.

Graphite Suggested as Stopcock Lubricant for Use with Solvents

Powdered graphite may be used as a stopcock lubricant for separatory funnels and burettes when working with acetone and other solvents, it is reported. The graphite is insoluble in all ordinary solvents and is not affected by acids or alkalis.

It is said that only a small amount should be used, and that a single coating lasts for some time.

U.S.I.'s extensive facilities for the production of alcohol and alcohol-derived chemicals will be of great importance in the progress of national defense plans.

ADVERTISEMENT—*This entire page is a paid advertisement.*

September ★ **U.S.I. CHEMICAL NEWS** ★ 1940

Alcohol Employed to Test Gas Cylinders for Leaks

DETROIT, Mich. — Alcohol is apparently being successfully used in detecting leaks in propane cylinders, it is reported here.

It is said that the test consists simply in squirting a small amount of alcohol around the adapter of the cylinder and then examining for bubbles, the presence of which indicates leaking gas.

The alcohol, it is believed, may prove superior to other substances used in testing for leaks, because it does not freeze in winter, and because it appears to have no injurious effects on the rubber gaskets and metal parts of the adapter.

U.S.I. Products in Defense

(Continued from previous page)

sential to the defense program, together with their outstanding applications, are:

Ether. In combination with alcohol, it is used as a solvent in the manufacture of smokeless powder, collodions, nitrocellulose plastics, photographic emulsions and artificial silk.

Ethyl Acetate. One of the important solvents for nitrocellulose and used in this manner for the manufacture of airplane dopes, artificial leather, lacquers, leather finishes and numerous other applications.

Diethyl Phthalate. A plasticizer for cellulose acetate and nitrocellulose. Used in making dopes, lacquers, plastics, and safety glass.

Butyl Alcohol. Auxiliary solvent for nitrocellulose, ethyl cellulose, and many gums and resins. Important ingredient in many lacquers. Starting point in the manufacture of numerous useful derivatives such as butyl acetate and dibutyl phthalate.

Butyl Acetate. One of the most widely used solvents for nitrocellulose, in the manufacture of airplane dopes, artificial leather, lacquers, and many other products of this type.

Amyl Acetate. Another nitrocellulose solvent with widely diversified uses in the field of lacquers, leather finishes and coating compositions.

Diethyl Carbonate. Specialty solvent for nitrocellulose, made only by U.S.I. A pure neutral solvent used, among other applications, in making lacquers for coating the cathodes in radio tubes.

Ethylene. Reagent in making mustard gas, and for anesthesia.

Ethylene Glycol. Ingredient for low-freezing dynamite. Antifreeze agent.

Ethyl Chlorcarbonate. Raw material for ore flotation agents.

Dissolves Zein in Alcohol To Coat Stencil Sheets

CLARENDON HILLS, Ill. — Improved coatings for stencil sheets can be prepared by dissolving zein in a mixture of ethyl alcohol and a high-boiling solvent, according to a patent granted to an inventor here. A plasticizer is added, and formaldehyde may be used also to give greater water-resistance, it is said.

Inventor claims that coating is stronger than previously used compounds.

Ethyl Alcohol is produced by U.S.I.

Industrial Gloves Withstand Alcohol, Acids, and Lacquers

WILLARD, Ohio—High resistance to alcohol, chemicals, and solvents is claimed for industrial gloves made by a company here. The pair illustrated, it is said, showed no evidence

of failure, except a tiny break at the thumb, after a year's service in frequent contact with alcohol, turpentine, benzol, naptha, gasoline, lacquer, and acids.

Ethyl, Butyl Alcohols Used As Substitutes for Toluol

(Continued from previous page)

needed in these formulations, it has been learned, and this fact is an aid in keeping costs to a minimum. Moreover, the butyl alcohol tends to reduce the possibility of blushing. In the selection of a low-boiling nitrocellulose solvent for these reformulations, it is believed that ethyl acetate possesses marked advantages over methyl ethyl ketone. The latter is a relatively poor solvent for most synthetic resins.

Ethyl Alcohol, Butyl Alcohol, and Ethyl Acetate are produced by U.S.I.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

An aluminum paint is said to dry to handle in 10 to 15 minutes, and to be resistant to acids and alkalis. According to the maker, it comes ready mixed, stays in suspension indefinitely, can be brushed, sprayed, or dipped, is suitable for exterior or interior work. **(No. 370)**

U S I

A new adhesive is reported to develop tensile strengths as high as 700 pounds per square inch. It is described as a rubber-resin compound that can be applied hot or cold and dries in 10 to 30 minutes. **(No. 371)**

U S I

Enamel for damp walls can be applied without waiting for the walls to dry, the maker claims. The enamel is said to lift surface moisture to the top of the enamel film by capillary action, allowing the enamel to dry under normal conditions. **(No. 372)**

U S I

A shellac fortifier is said to increase the abrasive resistance of shellac to four times the original value. Other advantages claimed for the fortifier are faster drying, easier sanding, and lower permeability to moisture. Available in several colors as well as clear. **(No. 373)**

U S I

A terpene resin is reported to be a pure hydrocarbon, thermoplastic, acid-resisting, unsaponifiable, non-yellowing, petroleum-soluble, chemically inert, low in cost. **(No. 374)**

U S I

A fume-resisting paint is white in color, will not yellow under attack by fumes such as those present in food plant, laboratories, rubber and chemical plants, or textile mills, it is claimed. **(No. 375)**

U S I

Vaportight lights are said to require fewer units than many other types of similar equipment, because of their light distribution. It is reported that they meet Underwriters' requirements. **(No. 376)**

U S I

A priming material is described as a blend of natural oils that penetrates through rust on a steel surface and hardens in position to prevent further corrosion. It is said that the material can also be used as a reducer for paints and as a vehicle for aluminum pigments. **(No. 377)**

U S I

Colloidal graphite coatings can be used, according to the maker, on non-conductors to adapt them for plating; as boiler dressings to prevent corrosion; to protect readily oxidizable alloys; and to impregnate gaskets. **(No. 378)**

U S I

An enameling material is said to be designed for thin cover-coat application. Maker says that it will not burn off at the edges, can be employed on metal surfaces of irregular shape, fires to a smooth satiny surface with standard firing procedure. **(No. 379)**

U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., N. Y. (U.S.I.) BRANCHES IN ALL PRINCIPAL CITIES

A SUBSIDIARY OF U. S. INDUSTRIAL ALCOHOL CO.

ALCOHOLS
Amyl Alcohol
Butyl Alcohol
Fusel Oil—Refined
Methanol

Ethyl Alcohol
Anhydrous
Absolute
C. P. 96%
Pure (190 proof)
Specially Denatured
Completely Denatured
U. S. I. (Denatured Alcohol Anti-freeze)
*Super Pyro Anti-freeze
*Solox Proprietary Solvent

***ANSOLS**
Ansol M
Ansol PR

ESTERS, ACETATES
Acetic Ether
Amyl Acetate
Butyl Acetate
Ethyl Acetate

ESTERS, ETHYL
*Diatol
Diethyl Carbonate
Diethyl Oxalate
Ethyl Chlorocarbonate
Ethyl Formate
Ethyl Lactate

*Registered Trade Mark

ESTERS, PHTHALATES
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

OTHER ESTERS
Amyl Propionate
Butyl Propionate
Dibutyl Oxalate

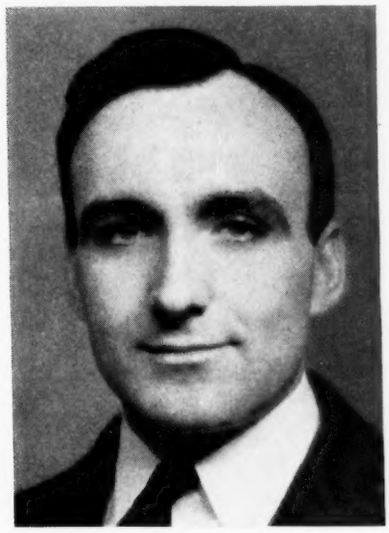
INTERMEDIATES
Acetoacetanilid
Acetoacet-o-chloranilid
Acetoacet-o-toluidid
Ethyl Acetoacetate
Sodium Ethyl Oxalacetate

ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.

OTHER PRODUCTS
Acetone, C.P.
Collodions
*Curbay Binders
*Curbay X (Powder)
Derex
Ethylene
Methyl Acetone
Nitrocellulose Solutions
Potash, Agricultural
*Vacatone
*Curbay B-G

Personnel

ANTHONY W. DELLER has been named patent counsel for the International Nickel Company . . . Derick S. Hartshorn, Jr., has been appointed technical director, Ethone Company, supervising development of new products . . . R. Latane Waring, Jr., has been named Cleveland sales office manager, American Agricultural Chemical . . . Dr. Charles Andrew Murray named head, technical oils sales division, Central Soya Company, Inc. . . . H. E. Ardahl, formerly chief metallurgist of John Deere Tractor Co., has been appointed assistant to vice-president of Michiana Prods. Corp.



Dr. Chas. Andrew Murray

Paul W. Litchfield has resigned presidency, Goodyear Tire and Rubber . . . W. E. Hayman has been appointed N. Y. district manager, soap sales department, Colgate-Palmolive-Peet . . . Dr. Henry J. Masson, N. Y. U. professor of Chemical Engineering named acting director, evening division, N. Y. U. College of Engineering . . . Palmer B. Stickney joins technical staff, Battelle Memorial Institute.

A. E. Alexander, recent holder of the Pearl Fellowship, Mellon Institute, has opened an office and laboratory at 665 Fifth Avenue, N. Y. . . . Irwin F. Zeiller has been elected vice-president, B. F. Drakenfield & Co., Inc., succeeding Oscar F. Zeiller, retired; Harold J. D. Miller becomes secretary; James Moriarity, assistant treasurer . . . F. J. Geiger has been appointed assistant manager, electrical department, in charge of sales and engineering at Norwood, Ohio, plant.

James E. Lounsbury, Jr., formerly on the editorial staff of CHEMICAL INDUSTRIES, has entered consultant work, with offices at 475 Fifth Ave., N. Y. He will specialize in patents, literature surveys, marketing and product promotion . . . Dr. N. D. Morgan, formerly horticulturist at North Louisiana Agricultural Experiment Station, has joined the field staff of American Potash Institute . . . Floyd Stroup has been appointed superintendent of melt shop, Copperweld Steel's new plant at Warren, Ohio; Craig Hampton, becomes superintendent of maintenance.

Karl A. Holst has joined the research staff of Rumford Chemical Works . . . Bumstead-Woolford organization has been appointed exclusive sales representatives for Oregon and Washington by Foxboro Company . . . Joseph A. King has been named manager, Providence branch office of Stein-Hall, succeeding William A. Boyd, retired; Jesse Fraser has joined Providence sales staff, while William S. Newell has transferred from Providence to cover Maine territory . . . Richard F. Reeves has joined the Calco Division, American Cyanamid Company.

Chester H. Norton has been appointed assistant general manager of purchases, Allis-Chalmers . . . Donald G. Schaffert has been made assistant chief chemist, Copperweld Steel's new Warren, O., plant . . . LeRue P. Bensing has been appointed Cleveland representative, Michigan Products Corp., handling the sale of company's heat, corrosion, and abrasion resistant alloy castings.

CHEMICAL KESSCO PRODUCTS SPECIALTIES

Manufacturers of

ACETINE DIACETINE
TRIACETINE DIBUTYL TARTRATE

FATTY ACID ESTERS

METHYL—ETHYL—PROPYL—BUTYL—
OCTYL—LAURYL—ETC.

STEARATE
CAPRATE
LAURATE
MYRISTATE
OLEATE
PALM
SOYBEAN
LINSEED
RICINOLEATE

Pure and self-emulsifying Mono, Di and Tri substituted Glycerine and Glycol Esters

of

Stearic, Capric, Lauric, Myristic, Oleic, Palmitic, Ricinoleic, Soybean and Linseed Fatty Acids

Also Esters of other Fatty Acids and Alcohols

For Samples, Specifications or Suggested Formulae Write to

KESSLER CHEMICAL CO., Inc.

Established 1921

DELAWARE AVE. and MIFFLIN ST. PHILADELPHIA, PA.

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1939 Average $1.24 - Jan. 1940 $1.17 - Aug. 1940 $1.23

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Acetaldehyde, drs, c-l, wks lb.	...	.11	...	.11	.10	.14
Acetaldol, 95%, 55 gal drs wks lb.	.11	.12	.11	.25	.21	.25
Acetamide, tech, lcl, kgs lb.	.28	.30	.28	.50	.28	.50
Acetanilid, tech, 150 lb bbls lb.	...	.22	...	.22	.22	.29
Acetic Anhydride, drs, f.o.b. wks, frt all'd ....lb.	.10½	.11½	.10½	.11½	.10½	.11
Acetin, tech, drs .....lb.	...	.33	...	.33	...	.33
Acetone, tks, f.o.b. wks, frt all'd .....lb.	...	.05	.05	.06	.04¼	.06
drs, c-l, f.o.b. wks, frt all'd' lb.	...	.06½	.06½	.07½	.05¾	.07¼
Acetyl chloride, 100 lb cbys lb.	.55	.68	.55	.68	.55	.68
ACIDS						
Acetic, 28%, 400 lb bbls, c-l, wks .....100 lbs.	...	2.23	...	2.23	...	2.23
glacial, bbls, c-l, wks 100 lbs.	...	7.62	...	7.62	...	7.62
glacial, USP bbls, c-l, wks, ...100 lbs.	...	10.25	...	10.25	...	10.25
Acetic Acid Glacial, *Synthetic* 99.5%, cbys, cases, delv lb.	...	.0918	...	...	...	...
99.5%, 110-gal dr, delv lb.	...	.0868	...	...	...	...
USP XI, cases, cbys, delv ..... lb.	...	.11	...	...	...	...
USP XI, 110-gal drs, delv ..... lb.	.10¼	.10½	...	...	...	...
CP, cases, cbys, delv ..lb.	...	.14	...	...	...	...
CP, 55-gal drs, delv ...lb.	.13¼	.13½	...	...	...	...
Acetylsalicylic, USP, 225 lb bbls ..... lb.	...	.45	...	.45	.40	.50
Adipic, kgs, bbls ..... lb.	...	.31	.31	.72	...	.72
Anthranilic, ref'd, bbls...lb.	1.15	1.20	1.15	1.20	1.15	1.20
tech bbls .....lb.	...	.75	...	.75	...	.75
Ascorbic, bot .....oz.	2.00	2.05	2.25	3.00	2.75	3.25
Battery, cbys, wks ...100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic tech, 100 lb kgs lb.	.43	.47	.43	.47	.43	.47
USP, 100 lb kgs .....lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, 80 tons, bgs, delv ..... ton *a*	93.50	96.00	...	96.00	...	96.00
Broenner's, bbls .....lb.	...	1.11	...	1.11	...	1.11
Butyric, edible, c-l, wks, cbys lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs, wks .lb.	...	.22	...	.22	...	.22
wks, lcl .....lb.	...	.23	...	.23	...	.23
tks, wks .....lb.	...	.21	...	.21	...	.21
Caproic, normal, drs .....lb.	.30	.35	.35	.40	...	.35
Chicago, bbls .....lb.	...	2.10	...	2.10	...	2.10
Chlorosulfonic, 1500 lb drs, wks .....lb.	.03½	.05	.03½	.05	.03½	.05
Chromic, 99¾%, drs, delv lb.	.15¼	.17¼	.15¼	.17¼	.15¼	.17¼
Citric, USP, crys, 230 lb bbls ..... lb. *b*	.20	.21	.20	.21½	.20	.22½
anhyd, gran bbls .....lb *b*	...	.23	...	.23	.23	.25
Cleve's, 250 lb bbls .....lb.	...	.57	...	.57	...	.57
Cresylic, 99%, straw, HB, drs, wks, frt equal ..gal.	.68	.70	.68	.70	.49	.70
99%, straw, LB, drs, wks, frt equal .....gal.	.68	.75	.68	.75	.55	.75
resin grade, drs, wks, frt equal .....lb.	.08¾	.09¼	.08¾	.09¼	.08¼	.09¼
Crotonic, bbls, delv .....lb.	.21	.50	.21	.50	.21	.50
Formic, tech, 140 lb drs..lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls .....lb.	.24	.28	.24	.75	...	.75
Fuming, see Sulfuric (Oleum)						
Gallic, tech, bbls .....lb.	.90	.93	.75	.93	.70	.73
USP, bbls .....lb.	.92	.95	.92	.95	.77	.81
H, 225 lb bbls, wks ....lb.	...	.45	...	.45	.50	.55
Hydriodic, USP, 47%...lb.	...	2.42	2.30	2.42	...	2.30
Hydrobromic, 34% conct 155 lb cbys, wks .....lb.	.42	.44	.42	.44	.42	.44
Hydrochloric, see muriatic						
Hydrofluoric, 30%, 400 lb bbls, wks .....lb.	.06	.06½	.06	.06½	.06	.07½
Hydrofluosilicic, 35%, 400 bbls, wks .....lb.	.09	.09¼	.09	.09½	.09	.09½
Lactic, 22%, dark, 500 lb bbls lb.	.02½	.03¾	.02½	.03¾	.02½	.02¾
22%, light ref'd, bbls..lb.	.03½	.04¾	.03½	.04¾	.03½	.03¾
44%, light, 500 lb bbls..lb.	.05½	.06¾	.05½	.06¾	.05½	.05¾
44%, dark, 500 lb bbls..lb.	.06½	.07¾	.06½	.07¾	.06½	.06¾
50%, water white, 500 lb bbls .....lb.	.10½	.11½	.10¾	.11½	.10½	.11½
Lauric, drs .....lb.	.11½	.12	.12½	.14½	.11¾	.12¼
Laurent's, 250 lb bbls ....lb.	...	.45	.45	.46	.45	.46
Maleic, powd, kgs .....lb.	...	.30	.30	.40	.30	.40
Malic, powd, kgs .....lb.	...	.47	...	.47	.45	.60
Mixed, tks, wks .....N unit	.05	.06	.05	.07¼	.06½	.07¼
S unit	.0085	.009	.008	.009	.008	.009
Monochloracetic, tech, bbls lb.	.15	.18	.15	.18	.16	.18
Monosulfonic, bbls .....lb.	...	1.50	1.50	1.60	1.50	1.60
Muriatic, 18°, 120 lb cbys, c-l, wks .....100 lb.	...	1.50	...	1.50	...	1.50
tks, wks .....100 lb.	...	1.05	1.00	1.05	...	1.00
20°, cbys, c-l, wks..100 lb.	...	1.75	...	1.75	...	1.75
tks, wks .....100 lb.	...	1.15	1.10	1.15	...	1.10
22°, c-l, cbys, wks..100 lb.	...	2.25	...	2.25	...	2.25
tks, wks .....100 lb.	...	1.65	1.60	1.65	...	1.60
CP, cbys .....lb.	.06½	.08	.06½	.08	.06½	.07½
N & W, 250 lb bbls .....lb.	.85	.87	.85	.87	.85	.87
Naphthenic, 240-280 s.v., drs lb.	.10	nom.	nom.	.14	.10	.14
Naphthionic, tech, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks .....100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks 100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks 100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv .....lb.	.11½	.13	.11½	.13	.11½	.12½
Oxalic, 300 lb bbls, wks, or N Y .....lb.	.10¾	.12	.10¾	.12	.10¾	.12
Phosphoric, 85%, USP, cbys lb.	...	.12	.12	.14	.12	.14
50%, acid, c-l, drs, wks..lb.	...	.12	.06	.12	.06	.08
75%, acid, c-l, drs, wks..lb.	...	.07½	...	.07½	...	.07½
Picric, kgs, wks .....lb.	...	.35	.35	.40	.35	.40
Propionic, 98% wks, drs..lb.	...	.25	...	.25	...	.22
80% .....lb.	.14	.20	...	.20	.16	.17½
Pyrogallic, tech, lump, pwd, bbls .....lb.	...	1.20	1.05	1.20	1.45	1.63
cryst, USP .....lb.	1.70	2.25	1.55	2.25	1.55	2.10
Ricinoleic, bbls .....lb.	.27	.33	.27	.33	...	.35
Salicylic, tech, 125 lb bbls, wks .....lb.	...	.33	...	.33	...	.33
USP, bbls .....lb.	.35	.40	.35	.40	.35	.40
Succinic, bbls .....lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb bbls, wks lb.	...	.17	.17	.18	.17	.18
Sulfuric, 60°, tks, wks...ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks ....100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks .....ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks ....100 lb.	...	1:50	...	1.50	...	1.50
CP, cbys, wks .....lb.	.06½	.08	.06½	.08	.06½	.07½
Fuming (Oleum) 20% tks, wks .....ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls ..lb.	.54	.56	.44	.56	.40	.47
Tartaric, USP, gran, powd, 300 lb bbls .....lb.	.41¼	.42¼	.35¼	.42¼	.27½	.31¼
Tobias, 250 lb bbls .....lb.	.55	.60	.55	.60	.55	.67
Trichloroacetic bottles ....lb.	2.00	2.50	2.00	2.50	2.00	2.50
kgs .....lb.	...	1.75	...	1.75	...	1.75
Tungstic, tech, bbls .....lb.	no prices			no prices	1.70	1.80
Albumen, light flake, 225 lb. bbls .....lb.	.55	.62	.55	.62	.52	.68
dark, bbls .....lb.	.13	.18	.13	.18	.13	.18
egg, edible .....lb.	.54	.60	.53	.62	.58	.78
ALCOHOLS						
Alcohol, Amyl (from Pentane) tks, delv .....lb.	...	.101	...	.101	...	.101
c-l, drs, delv .....lb.	...	.111	...	.111	...	.111
lcl, drs, delv .....lb.	...	.121	...	.121	...	.121
Amyl, normal 1-c-l drs	...	.08½	...	.08½	...	.08½
Wyandotte, Mich. .....lb.	...	.25	...	...	...	...
secondary, tks, delv ...lb. drs, c-l, delv E of Rockies .....lb.	...	.09½	...	09½	...	.09½
Benzyl, cans .....lb.	...	.68	.68	1.00	.68	1.00
Butyl, normal, tks, f.o.b. wks, frt all'd .....lb. *d*	...	.08	...	.09	.07	.09
c-l, drs, f.o.b. wks, frt all'd .....lb. *d*	...	.09	...	.10	.08	.10
Butyl, secondary, tks, delv ..... lb. *d*	...	.06½	...	.06½	.05½	.06½
c-l, drs, delv .....lb. *d*	...	.07½	...	.07½	.06½	.07½
Capryl, drs, tech, wks...lb.	...	.85	...	.85	...	.85
Cinnamic, bottles .....lb.	2.00	2.50	2.00	2.50	2.00	2.50
Denatured, CD, 14, c-l drs, wks .....gal. *e*	.31½	.36½	.31½	.36½	.27½	.36½
tks, East, wks .....gal.	...	.25½	...	.25½	.21½	.25½
Western schedule, c-l, drs, wks .....gal. *e*	...	.36½	.34½	.36½	.34½	.37
c-l, drs, wks .....gal. *e*	...	.26½	.21½	.26½	.19½	.22
Denatured, SD, No. 1, tks,	...	.22½	...	.22½	.25½	28½
Diacetone, pure, c-l, drs, delv .....lb. *f*	...	.12	...	.12	.09	.12
tech, contract, drs, c-l, delv .....lb.	...	.11½	...	.11½	.08½	.11½

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls.; *y* Price given is per gal.

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

GLACIAL ACETIC ACID

Standard Glacial Acetic Acid, 99.5% minimum

An exceptionally fine water-white acid, free from metals, higher acids, and objectionable empyreumatic substances.

Laundry Special Glacial Acetic Acid

A special acid for use as a laundry sour which leaves the finished clothes with a pleasant, agreeable odor. In addition there is no rolling on flat work and no bleaching action on colored goods.

U.S.P. XI Glacial Acetic Acid, 99.5% minimum

This acid exceeds all U.S.P. requirements and is ideal for all pharmaceutical and edible purposes. As described in the next column, glass carboys have been replaced by metal containers.

C.P. Glacial Acetic Acid, 99.8% minimum

This C.P. grade meets all A.C.S. Reagent specifications. Special cases and drums have been developed to eliminate the use of glass carboys.

Containers

Cases—Returnable—Two 6-gallon cans in a wooden box. Aluminum for Standard Glacial, stainless steel for U.S.P. and C.P. Glacial; 100 pounds net.

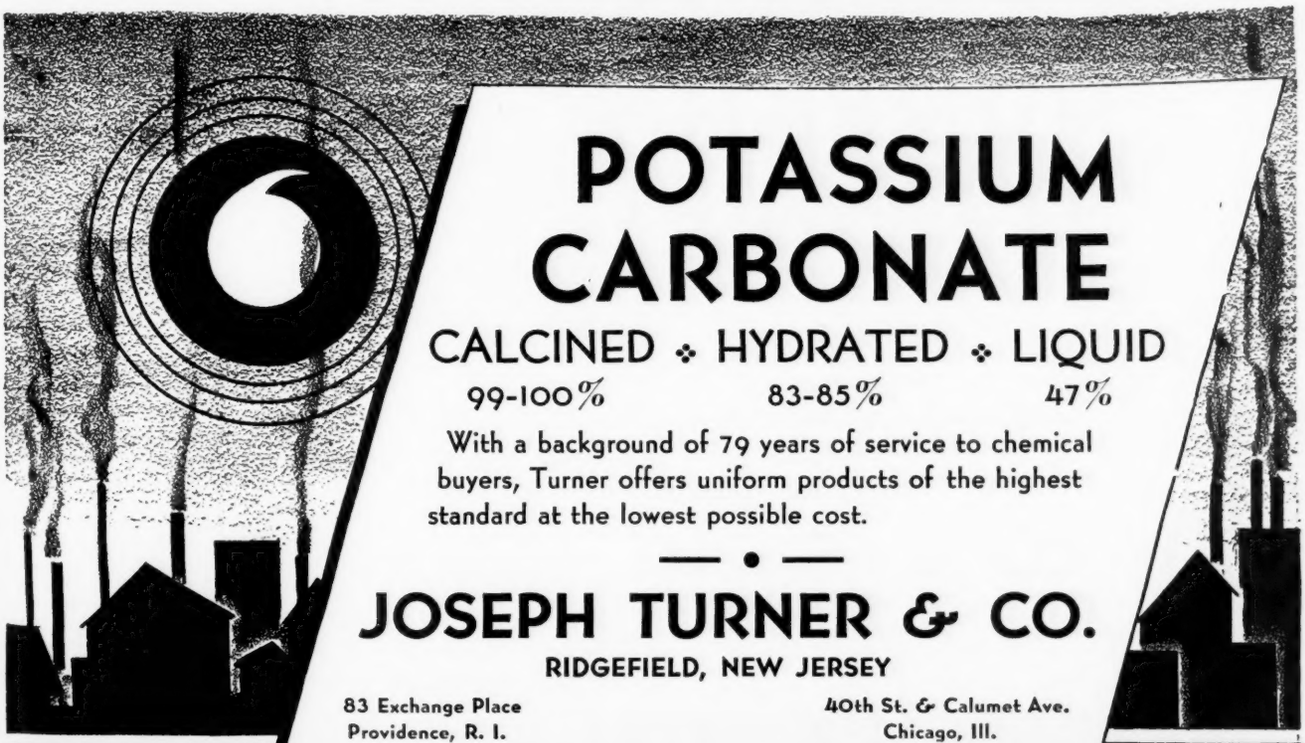
Drums—Returnable—110-gallon aluminum for Standard Glacial, 900 pounds net. Stainless steel for U.S.P. and C.P. Glacial, 450 pounds net.

Barrels—Non-returnable—For export of Standard Glacial, 420 pounds net.

Carboys—Non-returnable—For export of Standard, U.S.P. or C.P. acid, 44 pounds net.

NIACET

CHEMICALS CORPORATION
4750 PINE AVENUE
NIAGARA FALLS, N. Y.



POTASSIUM CARBONATE

CALCINED ❖ HYDRATED ❖ LIQUID

99-100% 83-85% 47%

With a background of 79 years of service to chemical buyers, Turner offers uniform products of the highest standard at the lowest possible cost.

JOSEPH TURNER & CO.

RIDGEFIELD, NEW JERSEY

83 Exchange Place
Providence, R. I.

40th St. & Calumet Ave.
Chicago, Ill.

Chemicals for Industry

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Alcohols (continued):						
Ethyl, 190 proof, molasses, tks	gal. g	...	5.92½	...	5.92½	4.46	4.48½
c-l, drs	gal. g	...	5.98½	...	5.98½	4.49	4.54½
c-l, bbls	gal. g	...	5.99½	...	5.99½	4.53	4.55½
Furfuryl, tech, 500 lb drs	lb.	...	.35	.25	.35	.25	.35
Hexyl, secondary tks, delv	lb.	...	.12	...	.12	...	.12
c-l, drs, delv	lb.	...	.13	...	.13	...	.13
Normal, drs, wks	lb.	3.25	3.50	3.25	3.50	3.25	3.50
Isoamyl, prim, cans, wks	lb.	...	.32	...	.32	...	.32
drs, lcl, delv	lb.	...	.27	...	.27	...	.27
Isobutyl, ref'd, lcl, drs	lb.	...	.073	...	.073	.073	.09
c-l, drs	lb.	...	.069	...	.069	.068	.08½
tks	lb.	...	.059	...	.059	...	.07½
Isopropyl, refd, 91%, c-l, drs, f.o.b. wks, frt all'd	lb.	...	.65	...	.65	...	.36
Ref'd 98%, drs, f.o.b. wks, frt all'd	gal.	...	.65	...	.65	...	.41
Tech 91% drs, above terms	gal.	...	.33½	...	.33½	...	.33½
tks, same terms	gal.	...	.28½	...	.28½	...	.28½
Tech 98%, drs, above terms	gal.	...	.36	.36	.37½	...	.37½
tks, above terms	gal.	...	.31	.31	.32½	...	.32½
Spec. Solvent, tks, wks	gal.	...	.23½	...	.23½	.19	.23½
Aldehyde ammonia, 100 gal drs	lb.	.65	.70	.65	.82	.80	.82
Aldehyde Bisulfite, bbls, delv	lb.	...	.17	...	.17	...	.17
Aldol, 95%, 55 and 110 gal. drs, delv	lb.	.11	.12	.11	.12	.11	.20
Alphanaphthol, crude, 300 lb bbls	lb.	...	.52	...	.52	...	.52
Alphanaphthylamine, 350 lb bbls	lb.	...	.32	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks	100 lb.	...	3.75	...	3.75	3.40	3.75
delv NY, Phila	100 lb.	...	3.75	...	3.75	3.40	3.75
Granular, c-l, bbls wks	100 lb.	...	3.50	...	3.50	3.15	3.50
Powd, c-l, bbls, wks	100 lb.	...	3.90	...	3.90	3.55	3.90
Chrome, bbls	100 lb.	no prices		6.50	6.75	6.50	6.75
Potash, lump, c-l, bbls, wks	100 lbs.	...	4.00	...	4.00	3.65	4.00
Granular, c-l, bbls, wks	100 lb.	...	3.75	...	3.75	3.40	3.75
Powd, c-l, bbls, wks	100 lb.	...	4.15	...	4.15	3.80	4.15
Soda, bbls, wks	100 lb.	...	3.25	...	3.25	...	3.25
Aluminum metal, c-l, NY	100 lb.	...	18.00	18.00	20.00	...	20.00
Acetate, 20%, bbls	lb.	.08	.09	.07½	.09	.07½	.09
Basic powd, bbls, delv	lb.	.35	.50	.35	.50	.40	.50
32% basic, bbls, delv	lb.	.09½	.12	...	...	...	...
Insoluble basic powder, bbls, delv	lb.	...	.40	...	...	...	...
Soluble normal pwdr	lb.	...	.22	...	...	...	...
Soluble basic powder	lb.	...	.33	...	...	...	...
Chloride anhyd, 99% wks	lb.	.08	.12	.08	.12	.06	.12
93%, wks	lb.	.05	.08	.05	.08	.05	.08
Crystals, c-l, drs, wks	lb.	.06	.06½	.06	.06½	.06	.06¼
Solution, drs, wks	lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv	lb.	...	.13	...	.13	...	.13
Hydrate, 96%, light, 90 lb bbls, delv	lb.	.12½	.13	.12½	.13½	.11½	.13
heavy, bbls, wks		.029	.03½	.029	.03½	.029	.03½
Oleate, drs	lb.	.17½	.20	.16¾	.20	.16¾	.18½
Palmitate, bbls	lb.	.20½	.21½	.20½	.24½	.23	.24½
Resinate, pp., bbls	lb.		.15		.15		.15
Stearate, 100 lb bbls	lb.	.18	.19	.19	.20	.16	.22½
Sulfate, com, c-l, bgs, wks	100 lb.	...	1.15	...	1.15	...	1.15
c-l, bbls, wks	100 lb.	...	1.35	...	1.35	...	1.35
Sulfate, iron-free, c-l, bags, wks	100 lb.	...	1.60	1.60	1.80	...	1.45
c-l, bbls, wks	100 lb.	...	1.80	1.65	1.80	...	1.65
Aminoazobenzene, 110 lb kgs	lb.	...	1.15	...	1.15	...	1.15
Ammonia anhyd fert com, tks	lb.	...	.06	.04½	.06	.04½	.05½
Ammonia anhyd, 100 lb cyl	lb.	...	.16	...	.16	...	.16
50 lb cyl	lb.	...	.22	...	.22	...	.22
26°, 800 lb drs, delv	lb.	.02¼	.02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH	cont.	...	.05¼z	.04	.05¼	...	.04z
Ammonium Acetate, kgs	lb.	.27	.33	.27	.33	.26	.33
Bicarbonate, bbls, f.o.b. wks	100 lb.	...	5.56	...	5.56	5.15	5.71
Bifluoride, 300 lb bbls	lb.	.14½	.16½	.14½	.16½	.14½	.16½
Carbonate, tech, 500 lb bbls	lb.	.08	.11	.08	.11	.08	.12
Chloride, White, 100 lb bbls, wks	100 lb.	4.45	...	4.45	4.90	4.45	4.90
Gray, 250 lb. bbls, wks	100 lb.	5.50	5.75	5.50	6.25	5.50	6.25
Lump, 500 lb cks spot	lb.	.10½	.11	.10½	.11	.10½	.11
Lactate, 500 lb bbls	lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls	lb.	...	.23	...	.23	...	.23
Linoleate, 80% anhyd, bbls	lb.	...	.12	...	.12	.11	.15
Naphthenate, bbls	lb	...	.17	...	.17	...	.17
Nitrate, tech, bbls	lb.	...	.0455	...	.0455	.036	.0455
Oleate, drs	lb.	...	.14	...	.14	.11	.14
Oxalate, neut, cryst, powd, bbls	lb.	.19	.20	.19	.20	.19	.20
Perchlorate, kgs	lb.	.17	nom.	.17	.19		.16
Persulfate, 112 lb kgs	lb.	.21	.22	.21	.22	.21	.24
Phosphate, diabasic tech, powd, 325 lb bbls	lb.	.07¼	.09¼	.07¼	.10	.07½	.10
Ricinoleate, bbls	lb.	...	.15	...	.15	...	.15
Stearate, anhyd, bbls	lb.	...	.24½	...	.24½	.22	.24½
Paste, bbls	lb.	...	.06½	...	.06½	.06½	.08

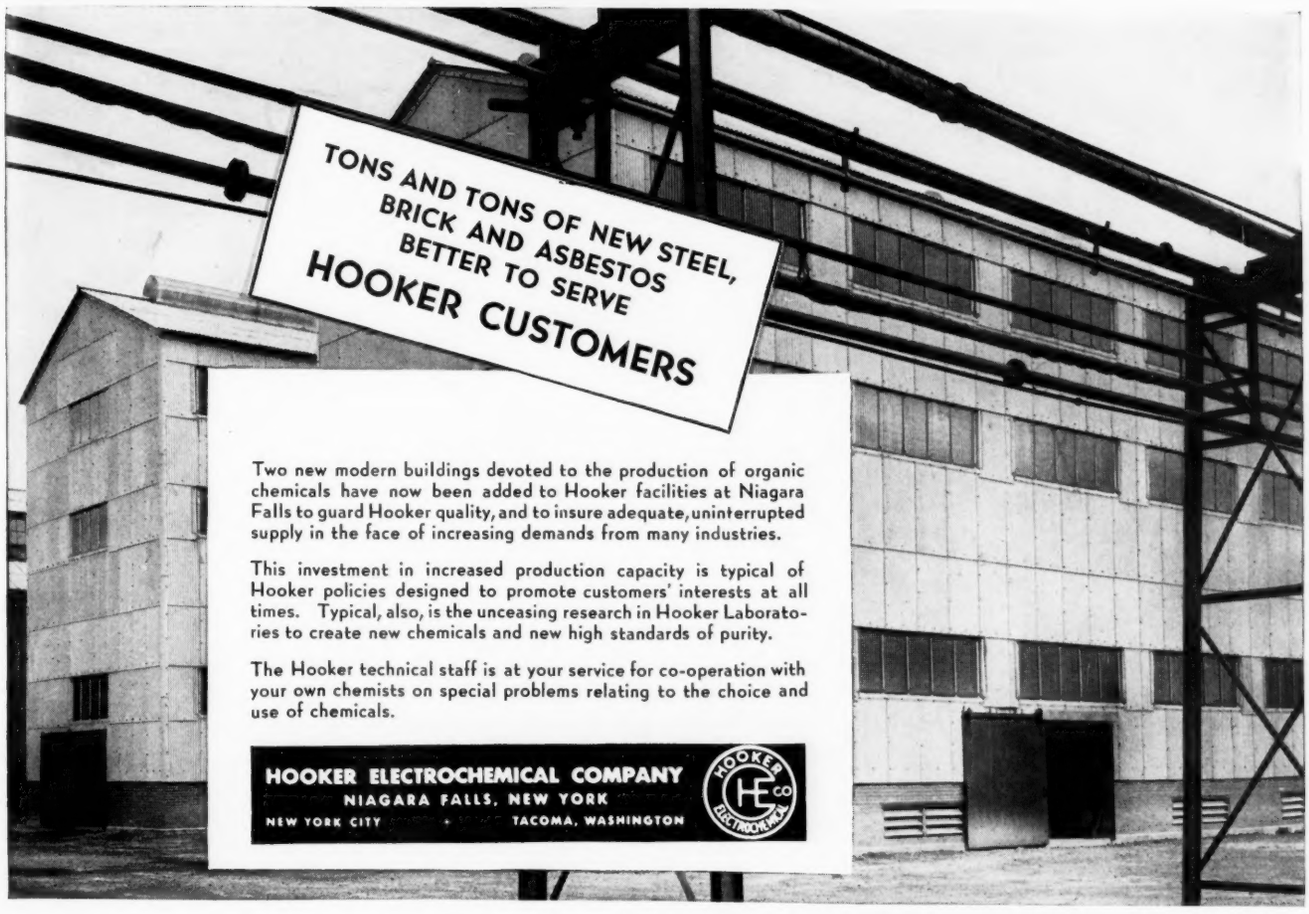
g Grain alcohol 25c a gal. higher in each case. ** On a delv. basis.
z On a f.o.b. wks. basis.

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Ammonium (continued):						
Sulfate, dom, f.o.b., bulk	ton	...	28.00	...	28.00	27.00	28.00
Sulfocyanide, pure, kgs	lb.	...	.65	...	.65	.55	.65
Amyl Acetate (from pentane) tks, delv	lb.	...	.095	...	.095	.095	.10
c-l, drs, delv	lb.	...	.105	...	.105	.105	.11
lcl, drs, delv	lb.	...	.115	...	.115	.115	.112
tech drs, delv	lb.	...	.12½	...	.12½	.10½	.12½
Secondary, tks, delv	lb.	...	.08½	...	.08½	...	.08½
c-l, drs, delv	lb.	...	.09½	...	.09½	...	.09½
tks, delv	lb.	...	.08½	...	.08½	...	.08½
Chloride, norm, drs, wks	lb.	.56	.68	.56	.68	.56	.68
mixed, drs, wks	lb.	.0565	.0665	.0565	.0665	.0565	.077
tks, wks	lb.	...	.0465	...	.0465	.0465	.06
Mercaptan, drs, wks	lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs	lb.	...	.25	...	.25	...	.25
Stearate, lcl, wks, drs	lb.	...	.26	...	.26	...	.26
Amylene, drs, wks	lb.	.102	.11	.102	.11	.102	.11
tks, wks	lb.	...	.09	...	.09	...	.09
Aniline Oil, 960 lb drs and tks	lb.	...	.14½	...	.14½	.14½	.17½
Annatto fine	lb.	.34	.39	.34	.39	.34	.39
Anthracene, 80%	lb.	...	.55	...	.55	.55	.75
Anthraquinone, sublimed, 125 lb bbls	lb.	...	.65	...	.65	...	.65
Antimony metal slabs, ton lots	lb.	...	.14	...	.14	.11¼	.14
Butter of, see Chloride.							
Chloride, soln, cbys	lb.	...	.17	...	.17	...	.17
Needle, powd, bbls	lb.	.18	.22	.18	.22	.12	.20
Oxide, 500 lb bbls	lb.	.13	.14	.13	.15¾	.10	.15¾
Salt, 63% to 65%, tins	lb.	...	.30	.42	nom.	.25¾	.42
Archil, conc, 600 lb bbls	lb.	no prices		no prices		.21	.27
Double, 600 lb bbls	lb.	no prices		no prices		.18	.20
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbls	lb.	.09½	.10	.09	.10	.08½	.09
Arsenic, Metal	lb.	no prices		...	...	.40	.60
Red, 224 lb cs kgs	lb.	no prices		.17½	.18	.18	.19
White, 112 lb kgs	lb.	.03¼	.04	.03	.03¾	.03	.03¾

B

Barium Carbonate precip, 200 lb bgs, wks	ton	52.50	55.00	52.50	62.50	52.50	62.50
Nat (witherite) 90% gr, c-l, wks, bgs	ton	45.00	47.00	45.00	47.00	41.00	47.00
Chlorate, 112 lb kgs, NY	lb.	.25	.30	.20	.26	.16½	.25
Chloride, 600 lb bbls, delv, zone 1	ton	77.00	92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs	lb.	...	.10	.10	.12	.11	.12
Hydrate, 500 lb bbls	lb.	.06½	.07	.06½	.07	.04½	.05½
Nitrate, bbls	lb.	.08½	.10½	.09½	.10½	.06¾	.10½
Barytes, floated, 350 lb bbls c-l, wks	ton	...	25.15	...	25.15	...	23.65
Bauxite, bulk, mines	ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks	ton	...	16.00	...	16.00	...	16.00
200 mesh	ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb. drs, wks	lb.	.55	.60	.55	.60	.60	.62
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd	gal.	...	.14	.14	.16	...	.16
90% c-l, drs	gal.	...	.19	.19	.21	...	.21
Ind pure, tks, frt all'd	gal.	...	.14	.14	.16	...	.16
Benzidine Base, dry, 250 lb bbls	lb.	...	.70	...	.70	.70	.72
Benzoyl Chloride, 500 lb drs	lb.	.23	.28	.23	.28	.40	.45
Benzyl Chloride, 95-97% rfd, drs	lb.	.19	.21	.19	.21	.30	.40
Beta-Naphthol, 250 lb bbls, wks	lb.	.23	.24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls	lb.	.51	.52	.51	.52	.51	.52
Bismuth metal	lb.	...	1.25	...	1.25	1.05	1.25
Chloride, boxes	lb.	3.20	3.25	3.20	3.25	3.20	3.25
Hydroxide, boxes	lb.	3.35	3.46	3.35	3.46	3.15	3.40
Oxychloride, boxes	lb.	...	3.10	...	3.10	2.95	3.10
Subbenzoate, boxes	lb.	...	3.36	3.25	3.36	3.25	3.30
Subcarbonate, kgs	lb.	1.73	1.76	1.73	1.76	1.43	1.76
Trioxide, powd, boxes	lb.	...	3.56	3.56	3.57	...	3.57
Subnitrate, fibre, drs	lb.	1.48	1.51	1.48	1.51	1.23	1.51
Blanc Fixe, 400 lb bbls, wks	ton h	35.00	42.50	50.00	80.00	40.00	80.00
Beaching Powder, 800 lb drs, c-l, wks, contract	100 lb.	...	2.00	...	2.00	...	2.00
lcl, drs, wks	lb.	2.25	3.35	2.25	3.35	2.25	3.60
Blood, dried, f.o.b., NY	unit	...	2.25	2.25	3.35	2.50	4.25
Chicago, high grade	unit	...	2.50	2.00	3.50	2.30	4.25
Imported shipt	unit	...	2.45	2.25	3.30	2.65	3.90
Blues, Bronze Chinese Prussian Soluble	lb.	...	.33	.33	.37	.33	.37
Milori, bbls	lb.	.33	.34	.33	.34	.33	.37
Ultramarine,* dry, wks, bbls	lb.	...	.11	...	.11	...	.11
Regular grade, group 1	lb.	...	.16	...	.16	...	.16
Special, group 1	lb.	...	.19	...	.19	...	.19
Pulp, No. 1	lb.	.22	.27	.22	.27	...	.27
Bone, 4½ + 50% raw, Chicago	ton	...	30.00	30.00	33.00	27.00	35.00
Bone Ash, 100 lb kgs	lb.	.06	.07	.06	.07	.06	.07
Meal, 3% & 50%, imp	ton	...	32.50	32.00	32.50	22.00	32.00
Domestic, bgs, Chicago	ton	29.00	30.00	29.00	32.00	24.00	32.00
Borax, tech, gran, 80 ton lots, sacks, delv	ton i	...	43.00	...	43.00	...	43.00
bbls, delv	ton i	...	53.00	...	53.00	...	53.00

h Lowest price is for pulp, highest for high grade precipitated; i Crystals $6 per ton higher; USP, $15 higher in each case; *Freight is equalized in each case with nearest producing point.


TONS AND TONS OF NEW STEEL,
BRICK AND ASBESTOS
BETTER TO SERVE
HOOKER CUSTOMERS
Two new modern buildings devoted to the production of organic chemicals have now been added to Hooker facilities at Niagara Falls to guard Hooker quality, and to insure adequate, uninterrupted supply in the face of increasing demands from many industries.
This investment in increased production capacity is typical of Hooker policies designed to promote customers' interests at all times. Typical, also, is the unceasing research in Hooker Laboratories to create new chemicals and new high standards of purity.
The Hooker technical staff is at your service for co-operation with your own chemists on special problems relating to the choice and use of chemicals.
HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS, NEW YORK
NEW YORK CITY
TACOMA, WASHINGTON
HOOKER
HE CO
ELECTROCHEMICAL

ABC

FORMALDEHYDE

U. S. P.

Manufactured by Kay-Fries Chemicals, Inc.

Tank Cars Drums Carboys

Inquiries Solicited

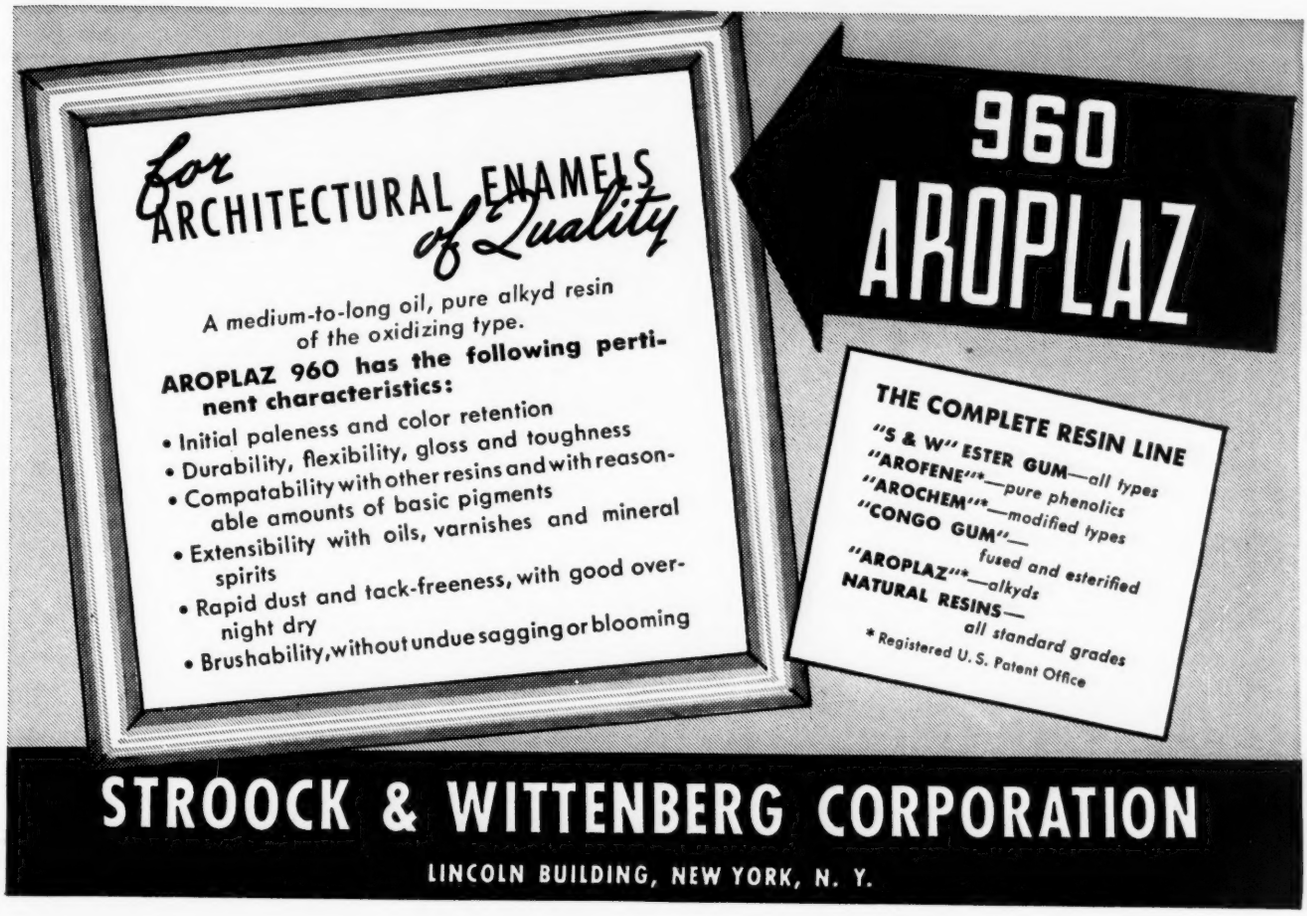
AMERICAN-BRITISH CHEMICAL SUPPLIES, Inc.
180 MADISON AVE., NEW YORK, N.Y.

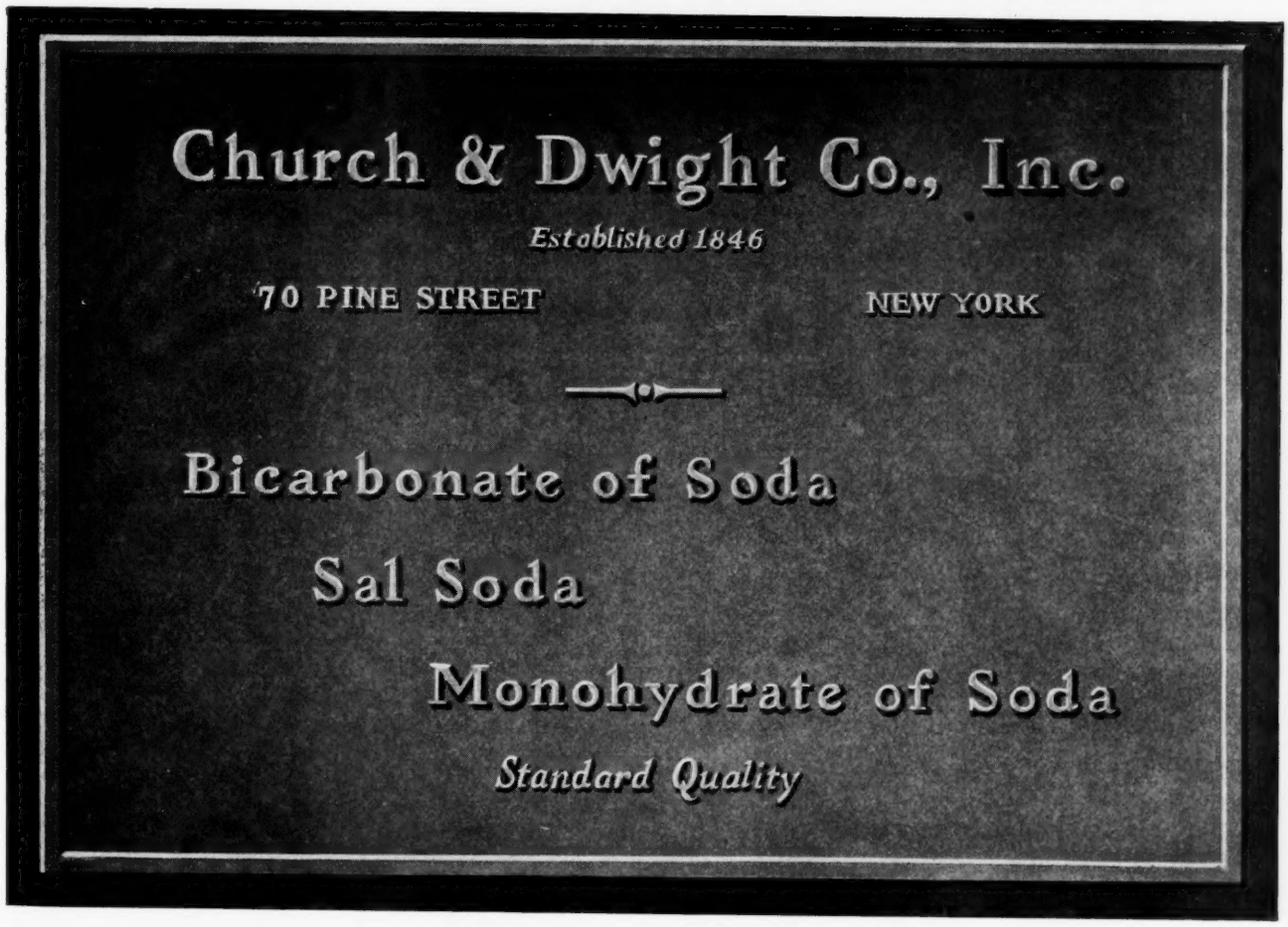
	Current Market	1940 Low	1940 High	1939 Low	1939 High
Borax (continued)					
Tech, powd, 80 ton lots, sacks ton *i*	...	48.00	47.00	48.00	...	47.00
bbs, delv ton *i*	...	58.00	57.00	58.00	...	57.00
Bordeaux Mixture, drs lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases lb.	.25	.30	.25	.43	.30	.43
Bronze, Al, pwd, 300 lb drs lb.	...	.57	...	.57	.90½	.92½
Gold, blk lb.	.60	.65	.60	.65	.45	.65
Butanes, com 16-32° group 3 tks lb.	.02½	.03	.02¼	.03¾	.02¼	.03¾
Butyl, Acetate, norm drs, frt all'd lb.	...	.09	...	.10	.09	.10
tks, frt all'd lb.	...	.08	...	.09	.08	.09
Secondary, tks, frt all'd lb.	...	.06½	...	.06½	.05½	.06½
drs, frt all'd lb.	.07½	.08	.07½	.08	.068	.08
Aldehyde, 50 gal drs, wks lb.	.15½	.17½	.15½	.17½	.15½	.17½
Carbinol, norm (see Normal Amyl Alcohol)						
Crotonate, norm, 55 and 110 gal drs, delv lb.	...	.35	...	.35	.35	.75
Lactate lb.	.23½	.24½	.23½	.24½	.22½	.24½
Oleate, drs, frt all'd lb.	...	.25	...	.25	...	.25
Propionate, drs lb.	.16½	.17	.16½	.17	.16½	.18½
tks, delv lb.	...	.15½	...	.15½	.15½	.17
Stearate, 50 gal drs lb.	...	.28½	...	.28½	.26½	.28½
Tartrate, drs lb.	.55	.60	.55	.60	.55	.60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	...	.35½
Cadmium Metal lb.	.80	.85	.80	.85	.50	.85
Sulfide, orange, boxes lb.	...	.75	.75	.85	.75	.90
Calcium, Acetate, 150 lb bgs c-l, delv 100 lb.	...	1.90	...	1.90	1.65	1.90
Arsenate, c-l, E of Rockies, dealers, drs lb.	.06	.06½	.06	.07¼	.06¾	.07¼
Carbide, drs lb.	...	.04¾	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs c-l lb.	...	1.00	...	1.00	...	1.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv ton	...	20.50	...	22.00	...	22.00
paper bags, c-l, delv ton	20.50	35.00	20.50	36.00	23.00	36.00
Solid, 650 lb drs, c-l, delv ton	19.00	35.00	19.00	35.00	...	20.00
Ferrocyanide, 350 lb bbls wks lb.	...	.20	...	.20	...	.20
Gluconate, Pharm, 125 lb bbls lb.	.50	.57	.50	.57	.50	.57
Levulinate, less than 25 bbl lots, wks lb.	...	3.00	...	3.00	...	3.00
Nitrate, 100 lb bags ton	no prices		28.00	29.00	...	28.00
Palmitate, bbls lb.	.22	.24	.22	.24	.22	.23
Phosphate, tribasic, tech, 450 lb bbls lb.	.0635	.0705	.0635	.07½	.06½	.07½
Resinate, precip, bbls lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls lb.	.20½	.22½	.20½	.22½	.19	.21
Camphor, slabs lb.	.83	.84	.83	.84	.46	.77
Powder lb.	.83	.84	.83	.84	.45	.47
Carbon Bisulfide, 500 lb drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Black, c-l, bgs, delv, price varying with zone† lb.	...	.03	.02¾	.03¾	.02¾	.03¾
lcl, bgs, f.o.b. whse lb.	...	.065	...	.065	...	.06¼
cartons, f.o.b. whse lb.	...	.065	...	.065	...	.06¼
cases, f.o.b. whse lb.	...	.07	...	.07	...	.07
Decolorizing, drs, c-l lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 55 or 110 gal drs, c-l, delv lb.	...	.66½	...	.66½	.05	.05½
Casein, Standard, Dom, grd lb.	.11¼	.12¼	.10	.14½	.07	.23
80-100 mesh, c-l bgs lb.	.11¾	.12¾	.11	.15	.07½	.23½
Castor Pomace, 5½ NH_3, c-l, bgs, wks ton	15.00	...	15.00	17.50	16.50	18.50
Imported, ship, bgs ton	no prices		...	20.00	18.00	18.00
Celluloid, Scraps, ivory cs lb.	.12	.15	.12	.15	.12	.15
Transparent, cs lb.	...	.20	...	.20	...	.20
Cellulose, Acetate, 50 lb kgs lb.	...	.30	.30	.34	.35	.36
Chalk, dropped, 175 lb bbls lb.	...	.02¾	.02¾	.03¾	.02¾	.03¾
Precip, heavy, 560 lb cks lb.	...	.03½	.02¾	.03¼	.02¾	.03¼
Light, 250 lb cks lb.	...	.03¼	.03¼	.04	.03¼	.04
Charcoal, Hardwood, lump, blk, wks bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv* ton	25.00	36.00	25.00	36.00	23.00	36.00
Willow, powd, 100 lb bbls, wks lb.	.06	.07	.06	.07	.06	.07
Chestnut, clarified, tks, wks lb.	...	.01¾	...	.01¾	...	.01⅝
25%, bbls, wks lb.	...	.02½	...	.02½	...	.02
China Clay, c-l, blk mines ton	...	7.60	7.60	9.50	7.00	7.60
Imported, lump, blk ton	no prices		...	26.00	22.00	26.00
Chlorine, cyls, lcl, wks, contract lb.	...	.07¼	.07½	.08½	.07½	.08½
cyls, c-l, contract lb *j*	...	.05¼	...	.05¼	.05¼	.05½
Liq. tk, wks, contract 100 lb.	...	1.75	...	1.75	1.75	2.00
Multi, c-l, cyls, wks, cont lb.	...	.019	...	.019	1.90	2.15
Chloroacetophenone, tins, wks lb.	3.00	3.50	3.00	3.50	3.00	3.50
Chlorobenzene, Mono, 100 lb drs, lcl, wks lb.	.06	.08	.06	.08	.06	.07½
Chloroform, tech, 1000 lb drs lb.	...	.20	.20	.21	.20	.21
USP, 25 lb tins lb.	...	.30	.30	.31	.30	.31
Chloropicrin, comml cyls lb.	...	.80	...	.80	...	.80
Chrome, Green, CP lb.	.21	.25	.21	.25	.21	.25
Yellow lb.	.13½	.14½	.13½	.14½	.13½	.15½
Chromium Acetate, 8% Chrome, bbls lb.	...	.05¾	...	.05¾	.05	.08
Fluoride, powd, 400 lb bbl lb.	.27	.28	.27	.28	.27	.28

j A delivered price; * Depends upon point of delivery; † New bulk price, tank cars ¼c per lb. less than bags in each zone.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Coal tar, bbls bbl.	7.50	7.75	7.50	8.00	7.50	8.00
Cobalt Acetate, bbls lb.	...	.80½	...	.80½	.65	.71
Carbonate tech, bbls lb.	...	1.58	1.38	1.60	1.25	1.63
Hydrate, bbls lb.	...	1.98	...	1.78	...	1.78
Linoleate, solid, bbls lb.	...	.33	...	.33	...	.33
paste, 6%, drs lb.	...	.31	...	.31	...	.31
Oxide, black, bgs lb.	...	1.84	...	1.84	1.67	1.84
Resinate, fused, bbls lb.	...	.13½	...	.13½	...	.13½
Precipitated, bbls lb.	...	.34	...	.34	...	.34
Cochineal, gray or bk bgs lb.	.37	.38	.37	.38	.35	.38
Teneriffe silver, bgs lb.	.38	.39	.38	.39	.36	.39
Copper, metal, electrol 100 lb.	...	11.00	11.00	11.62½	.10	12.50
Acetate, normal, bbls, wks lb.	.22	.24	.22	.24	.21	.24
Carbonate, 52-54% 400 lb. bbls lb.	...	.1570	.1570	.169	.14½	.169
Chloride, 250 lb bbls lb.	...	.16	.16	.18	.12½	.18
Cyanide, 100 lb drs lb.	...	.34	...	.34	...	.34
Oleate, precip, bbls lb.	...	.20	...	.20	...	.20
Oxide, black, bbls, wks lb.	...	.18	.18	.18¾	.15	.18¾
red 100 lb bbls lb.	...	.19½	.19½	.20	.15¾	.20
Sub-acetate verdigris, 400 lb bbls lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks 100 lb.	...	4.45	4.45	4.60	4.10	4.75
Copperas crys and sugar bulk c-l, wks ton	18.00	20.00	14.00	20.00	14.00	16.00
Corn Sugar, tanners, bbls 100 lb.	...	3.31	2.99	3.31	2.89	3.19
Corn Syrup, 42°, bbls 100 lb.	...	3.42	3.02	3.42	2.92	3.17
43°, bbls 100 lb.	...	3.47	3.07	3.47	2.97	3.22
Cotton, Soluble, wet, 100 lb bbls lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, powd & gran 300 lb bbls lb.	...	.34½	.28¼	.34½	.22¼	.25¾
Creosote, USP 42 lb cbys lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1 tks gal.	.13½	.14	.13½	.14	.13½	.14
Grade 2 gal.	.122	.132	.122	.132	.122	.132
Cresol, USP, drs lb.	.09¾	.10¼	.09¾	.10¼	.09½	.10½
Crotonaldehyde, 97%, 55 and 110 gal drs, wks lb.	.11	.12	.11	.12	.11	.22*
Cutch, Philippine, 100 lb bale lb.	...	.04½	.04	.04½	.04	.04½
Cyanamid, pulv, bags, c-l, frt all'd, nitrogen basis, unit	...	1.40	...	1.40	...	1.27½
D						
Derris root 5% rotenone, bbls lb.	.24	.30	.24	.30	.24	.30
Dextrin, corn, 140 lb bgs f.o.b., Chicago 100 lb.	...	3.80	3.40	3.80	3.30	3.75
British Gum, bgs 100 lb.	...	4.05	3.65	4.05	3.55	3.95
Potato, Yellow, 220 lb bgs lb.	...	.07¾	...	.07¾	.07	.08¼
White, 220 lb bgs, lcl lb.	.08½	.09	.08½	.09	.08	.09
Tapioca, 200 bgs, lcl lb.	...	.0715	...	.0715	...	.0715
White, 140 lb bgs 100 lb.	...	3.75	3.35	3.75	3.25	3.70
Diamylamine, c-l, drs, wks lb.	...	.47	...	.47	...	.47
lcl drs, wks lb.	...	.48	...	.50	...	.50
tks, wks lb.	...	.45	...	.45	...	.45
Diamylene, drs, wks lb.	.095	.102	.095	.102	.095	.102
tks, wks lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs lb.	.085	.092	.085	.092	.085	.092
tks, wks lb.	...	.075	...	.075	...	.075
Oxalate, lcl, drs, wks lb.	...	.30	...	.30	...	.30
Diamylphthalate, drs, wks lb.	.21	.21½	.21	.21½	.19	.21
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	...	1.10
Diatomaceous Earth, see Kieselguhr.						
Dibutoxy Ethyl Phthalate, drs, wks lb.	...	.35	...	.35	...	.35
Dibutylamine, lcl, drs, wks lb.	.51	.53	.51	.53	.53	.55
c-l drs, wks lb.	...	.50	...	.50	...	...
tks, wks lb.	...	.48	...	.48	...	...
Dibutyl Ether, drs, wks, lcl lb.	.24½	.25	.24½	.25	.24½	.25
Dibutylphthalate, drs, wks, frt all'd lb.	.19	.19½	.19	.19½	.19	.19½
Dibutyltartrate, 50 gal drs lb.	...	.50	...	.50	.45	.54
Dichlorethylene, drs lb.	...	.25	...	.25	...	.25
Dichloroethylether, 50 gal drs, wks lb.	.15	.16	.15	.16	.15	.16
tks, wks lb.	...	.14	...	.14	...	.14
Dichloromethane, drs, wks lb.	...	.23	...	.23	...	.23
Dichloropentanes, drs, wks lb.	...	.025	...	.025	no prices	
tks, wks lb.	...	.0221	...	.0221	no prices	
Diethanolamine, tks, wks lb.	...	.22½	...	.22½	.22½	.23
Diethylamine, 400 lb drs, lcl, f.o.b., wks lb.	...	.70	...	.70	.70	3.00
Diethylaniline, 850 lb drs lb.	.40	.52	.40	.52	.40	.52
Diethyl Carbinol, drs lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs lb.	...	.25	...	.25	.31¾	.35
Diethylorthotoluidin, drs lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, 1000 lb drs lb.	.19	.19½	.19	.19½	.19	.19½
Diethylsulfate, tech, drs, wks, lcl lb.	.13	.14	.13	.14	.13	.14
Diethyleneglycol, drs lb.	.14½	.15½	.14½	.15½	.14½	.17
Mono ethyl ethers, drs lb.	.14½	.15½	.14½	.16	.15	.16
tks, wks lb.	...	.13½	...	.13½	.13½	.14
Mono butyl ether, drs lb.	.22½	.24½	.22½	.24½	.23	.24
tks, wks lb.	...	.22	...	.22	...	.22
Diethylene oxide, 50 gal drs, wks lb.	.20	.24	.20	.24	.20	.24
Diglycol Laurate, bbls lb.	...	.16	.16	.21	.15	.23
Oleate, bbls lb.	...	.17	.13	.17	.13	.20
Stearate, bbls lb.	...	.22	.22	.26	.20	.28
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis lb.	...	1.00	...	1.00	...	1.00
Dimethylaniline, 340 lb drs lb.	.23	.24	.23	.24	.23	.24
Dimethyl Ethyl Carbinol, drs lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs, wks, frt all'd lb.	...	.18½	...	.18½	...	.19
Dimethylsulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50

k Higher price is for purified material; * These prices were on a delivered basis.


for ARCHITECTURAL ENAMELS of Quality
A medium-to-long oil, pure alkyd resin of the oxidizing type.
AROPLAZ 960 has the following pertinent characteristics:
• Initial paleness and color retention
• Durability, flexibility, gloss and toughness
• Compatability with other resins and with reasonable amounts of basic pigments
• Extensibility with oils, varnishes and mineral spirits
• Rapid dust and tack-freeness, with good overnight dry
• Brushability, without undue sagging or blooming
960
AROPLAZ
THE COMPLETE RESIN LINE
"S & W" ESTER GUM—all types
"AROFENE"*—pure phenolics
"AROCHEM"*—modified types
"CONGO GUM"—fused and esterified
"AROPLAZ"*—alkyds
NATURAL RESINS—all standard grades
* Registered U. S. Patent Office
STROOCK & WITTENBERG CORPORATION
LINCOLN BUILDING, NEW YORK, N. Y.


Church & Dwight Co., Inc.
Established 1846
70 PINE STREET
NEW YORK
Bicarbonate of Soda
Sal Soda
Monohydrate of Soda
Standard Quality

EDW. S. BURKE
J. F. HOLLYWOOD

Representing:

CARUS CHEMICAL CO., INC.

BENZOIC ACID
SODIUM BENZOATE
HYDROQUINONE
MANGANESE CARBONATE
MANGANESE DIOXIDE
MANGANESE SULFATE
POTASSIUM PERMANGANATE
RARER PERMANGANATES

BENZOL PRODUCTS CO.

AMINOACETIC ACID (Glycocoll)
AMINOPHYLLINE
BENZOCAINE
CHLORBUTANOL
CINCHOPHEN
CINCHOPHEN SODIUM
ETHYL GLYCOCOLL HYDROCHLORIDE
GLYCYL GLYCOCOLL HYDROCHLORIDE
8—HYDROXYQUINOLIN
ISOBUTYL PARA-AMINOBENZOATE
NEO CINCHOPHEN
OXYQUINOLIN BENZOATE
OXYQUINOLIN CITRATE
OXYQUINOLIN SULPHATE
POTASSIUM OXYQUINOLIN SULPHATE
PHENOBARBITAL
PHENOBARBITAL CALCIUM
PHENOBARBITAL SODIUM
PROPYL PARA-AMINOBENZOATE
TETRA-IODO-PHENOLPHTHALEIN SODIUM
THEOPHYLLINE
BENZALDEHYDE
BENZYL ALCOHOL
BROMSTYROL
CINNAMIC ACID
DIACETYL
METHYL CINNAMATE
METHYL PHENYL ACETATE
PHENYL ACETIC ACID
BENZALDEHYDE
BENZYL ALCOHOL
BENZYL CHLORIDE
BENZYL CYANIDE
DIETHYL OXALATE
DIMETHYL UREA
DI-NITRO CRESOL
CYANO ACETIC ACID
ETHYL BROMIDE
ETHYL CYANO ACETATE
8—HYDROXYQUINOLIN—5—SULPHONIC ACID

CRANSTON CHEMICAL CO.

LIQUID BROMINE

We could serve a few additional chemical manufacturers of non-conflicting products

EDW. S. BURKE
Established 1917
132 FRONT STREET NEW YORK, N. Y.

Nichols
COPPER SULPHATE

TRIANGLE BRAND
THE STANDARD FOR 50 YEARS
99% Pure

In large or small crystals, "Instant Brand," granular or snow, packed in 100-lb. waterproof bags and in new, clean barrels of 450 lbs. net.

MONOHYDRATED
(Full 35% Metallic Copper Content)

Now packed in re-fillable, removable-top drums of heavy, gauge steel to insure safe arrival.

COPPER OXIDE (Red)
NICKEL SULPHATE

PHELPS DODGE REFINING CORPORATION
40 WALL STREET, NEW YORK, N. Y. 230 N. MICHIGAN AVE., CHICAGO, ILL.

Dinitrobenzene
Glauber's Salt

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Dinitrobenzene, 400 lb bbls lb. *k*	...	.18	.18	.19	.16	.19
Dinitrochlorobenzene, 400 lb bbls lb.	...	.14	...	.14	.13½	.14
Dinitronaphthalene, 350 lb bbls lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	...	.22	.22	.23	.22	.24
Dinitrotoluene, 300 lb bbls lb.	...	.15½	...	.15½	...	.15½
Diphenyl, bbls lb.	.15	.20	.15	.20	.15	.25
Diphenylamine lb.	...	.25	.25	.32	.32	.32
Diphenylguanidine, 100 lb drs lb.	.35	.37	.35	.37	.31	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	...	nom.	...	nom.	...	nom.
Extract lb.	.05¼	.06¼	.05¼	.06¼	.05¼	.06¼
E						
Egg Yolk, dom., 200 lb cases lb.	.59	.62	.57	.62	.59	.69
Epsom Salt, tech, 300 lb bbls c-l, NY 100 lb.	...	1.90	1.90	2.10	1.90	2.10
USP, c-l, bbls 100 lb.	...	2.10	...	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs lb.	...	.26	...	.26	.22	.23
Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd lb.	...	.06	...	.06	...	.06
Nitrous conc bottles lb.	...	.68	...	.68	...	.68
Synthetic, wks, drs lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd' lb.	...	.06	.06	.06½	.051	.061
drs, frt all'd lb.	...	.07	.07	.08½	.061	.08
99%, tks, frt all'd lb.	...	.06¼	.06¼	.08	.0585	.0685
drs, frt all'd lb.	...	.07¼	.07¼	.08¾	.0685	.0785
Acetoacetate, 110 gal drs lb.	...	.27½	...	.27½	...	.27½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd lb.	.45	.50	.45	.50	.45	.50
Chloride, 200 lb drs lb.	.18	.20	.18	.20	.22	.24
Chlorocarbonate, cbys lb.	...	.30	...	.30	...	.30
Crotonate, drs lb.	...	35	...	.35	.35	.75
Formate, drs, frt all'd lb.	.25	.26	.23	.24	.27	.28
Lactate, drs, wks lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks lb.	...	.25	...	.25	.30	.34
Oxybutyrate, 50 gal drs, wks lb.	1.00	nom.	.30	1.00	.30	.30½
Silicate, drs, wks lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont lb.	.75	.85	.75	.85	.75	.85
Anhydrous lb.	...	.75	...	.75	...	.75
Dichloride, 50 gal drs, wks lb.	.0595	.0694	.0595	.0694	.0545	.0994
Glycol, 50 gal drs, wks lb.	.14½	.18½	.14½	.18½	.14½	.21
tks, wks lb.	...	.13½	...	.13½	.13½	.16
Mono Butyl Ether, drs, wks lb.	.16½	.17½	.16½	.21	.16½	.22
tks, wks lb.	...	.15½	...	.15½	.15½	.19
Mono Ethyl Ether, drs, wks lb.	.14½	.15½	.14½	.15½	.14½	.17
tks, wks lb.	...	.13½	...	.13½	.13½	.15
Mono Ethyl Ether Acetate, drs, wks lb.	.11½	.12½	.11½	.13	.11½	.14
tks, wks lb.	...	.10½	...	.10½	.10½	.13
Mono Methyl Ether, drs wks lb.	.15½	.16½	.15½	.17	.16	.22
tks, wks lb.	...	.14½	...	.14½	.14½	.17
Oxide, cyl lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline lb.	45	.47½	.45	.47½	.45	.47½
F						
Feldspar, blk pottery ton	17.00	19.00	17.00	19.00	17.00	19.00
Powd, blk wks ton	14.00	17.50	14.00	17.50	14.00	14.50
Ferric Chloride, tech, crys, 475 lb bbls lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys lb.	.06½	.07	.06¼	.07	.06¼	.06½
Fish Scrap, dried, unground wks unit *l*	...	3.10	3.10	4.25	3.00	4.25
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis unit *m*	...	2.25	2.25	3.50	2.35	3.00
Fluorspar, 98% bgs lb.	...	32.60	...	32.60	30.00	33.00
Formaldehyde, USP, 400 lb bbls, wks lb.	.055	.06	.05¾	.06¼	.05¾	.06¼
Fossil Flour lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ton	...	15.00	...	15.00	10.00	11.00
Imp powd, c-l, bgs ton	no prices		...	25.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.16	.17¼	.16	.17¼	.12½	.17¼
Fustic, crystals, 100 lb boxes lb.	.24	.25	.24	.28	.22	.28
Liquid 50°, 600 lb bbls lb.	.10½	.14	.10½	.14	.09½	.14
Solid, 50 lb boxes lb.	.19	.21	.19	.21	.17½	.21
G						
G Salt paste, 360 lb bbls lb.	...	.45	.45	.47	.45	.47
Gambier, com 200 lb bgs lb.	...	.06	...	.07	.06¾	.07¾
Singapore cubes, 150 lb bgs 100 lb.	...	.08¼	.09	.10	.08	.10
Gelatine, tech, 100 lb cs lb.	.42	.43	.42	.43	.42	.50
Glauber's Salt, tech, c-l, bgs, wks* 100 lb.	.95	1.18	.95	1.18	.95	1.18
Anhydrous, see Sodium Sulfate						

l + 10; *m* + 50; * Bbls. are 20c higher.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Glue, bone, com grades, c-l bgs ..... lb.	.13½	.15	.13½	.15½	.13½	.15½
Better grades, c-l, bgs lb.	.15	.23	.15	.23	.11½	.15½
Glycerin, CP, 550 lb drs lb.	...	.12½	...	.12½	...	.12½
Dynamite, 100 lb drs ... lb.	...	nom.	...	nom.	...	.09
Saponification, drs ..... lb.	...	.13	...	.13	.08½	.10
Soap Lye, drs ..... lb.	.07¾	.08¼	.07¾	.08¼	.07½	.07⅞
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls ... lb.	...	.27	...	.27	...	.27
Monostearate, bbls ..... lb.	...	.30	...	.30	...	.30
Oleate, bbls ..... lb.	...	.22	...	.22	...	.22
Phthalate ..... lb.	...	.38	.37	.38	...	.37
Glyceryl Stearate, bbls ... lb.	...	.18	...	.18	.24	.27½
Glycol Bori-Borate, bbls.. lbs.	...	.22	...	.22	.22	.23
Phthalate, drs ..... lb.	...	.38	...	.38	.38	.40
Stearate, drs ..... lb.	...	.26	...	.26	...	.26
GUMS						
Gum Aloes, Barbadoes ... lb.	.80	.85	.80	.90	.85	.90
Arabic, amber sorts ... lb.	.14	.15	.08½	.15	.09	.24
White sorts, No. 1, bgs lb.	.35	.36	.28	.36	.23	.35
No. 2, bgs ..... lb.	no prices		.27	.34	.21	.34
Powd, bbls ..... lb.	.18	.20	.12½	.20	.12½	.27
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY ..... lb.	.04½	.05½	.02¼	.10½	.02½	.10½
California, f.o.b. NY, drs ton	29.00	36.50	29.00	36.50	29.00	55.00
Egyptian, 200 lb cases, f.o.b. NY ..... lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases ..... lb.	.18	.20	.17	.24	.17	.34
Copal, Congo, 112 lb bgs, clean, opaque ..... lb.	...	.29½	..	.29½	.18¼	.29½
Dark amber ..... lb.	...	.12⅜	.11⅜	.12⅜	.07⅛	.11⅜
Light amber ..... lb.	...	.17	...	.17	.11¼	.17
Copal, East India, 180 lb bgs						
Macassar pale bold .... lb.	...	.13⅞	.13⅞	.15⅜	.11⅜	.15¼
Chips ..... lb.	...	.07½	.07½	.09	.05⅜	.08½
Dust ..... lb.	...	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.11⅛	.11⅛	.14⅜	.09½	.13¾
Singapore, Bold ..... lb.	...	.15¾	.14⅝	.17½	.14	.18¼
Chips ..... lb.	...	.08½	.08½	.09⅛	.05⅝	.10¼
Dust ..... lb.	...	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs ..... lb.	...	.11	.11	.13½	.09⅜	.14⅜
Copal Manila, 180-190 lb	...	.13⅞	.13¾	.16¾	.09¾	.14½
Loba B ..... lb.	...	.13¾	.13½	.16⅛	.09	.14⅛
Loba C ..... lb.	...	.13½	.12⅛	.14½	.07⅛	.12½
DBB ..... lb.	...	.12⅛	.06⅞	.12⅛	.05⅛	.08½
MA sorts ..... lb.	...	.09	.09	.13¾	.05⅞	.11
Copal Pontianak, 224 lb cases, bold genuine .. lb.	...	.15⅜	.15⅛	.18½	.15¼	.18½
Chips ..... lb.	...	.10	.08⅜	.10½	.07⅛	.11½
Mixed ..... lb.	...	.14⅜	.14⅛	.16⅝	.13⅜	.16⅝
Nubs ..... lb.	...	.12¾	.10¾	.13½	.10½	.14¾
Split ..... lb.	...	.13¾	.13½	.16⅛	.12	.16⅛
Damar Batavia, 136 lb cases						
A ..... lb.	...	.21⅝	.21⅝	.22¾	.20	.23¼
B ..... lb.	...	.20¼	.20⅛	.21⅜	.18½	.21⅜
C ..... lb.	...	.14⅜	.15⅜	.15¼	.13½	.15⅜
D ..... lb.	...	.13¼	.13¼	.13¾	.12¼	.14¼
A/D ..... lb.	...	.15¼	.13⅞	.14½	.12¾	.15¼
A/E ..... lb.	...	.12⅞	.12⅞	.13⅜	.11⅜	.13¾
E ..... lb.	...	.10	.10	.10⅜	.07¾	.10
F ..... lb.	...	.08	.08	.08¾	.07¼	.08¾
Singapore, No. 1 ..... lb.	...	.16⅝	.16⅝	.19⅝	.13¼	.19½
No. 2 ..... lb.	...	.12¼	.12¼	.15¾	.10½	.16⅜
No. 3 ..... lb.	...	.07⅜	.07⅜	.09	.05¼	.09⅛
Chips ..... lb.	...	.11	.11	.12½	.09¼	.12½
Dust ..... lb.	...	.07⅛	.07⅛	.09	.05¼	.09⅛
Seeds ..... lb.	...	.09⅞	.09⅞	.10½	.07¾	.10½
Elemi, cns, c-l ..... lb.	...	.10½	.10⅛	.11⅝	.08⅛	.12⅝
Ester ..... lb.	.06¼	.06¾	.06¼	.06¾	.06	.07
Gamboge, pipe, cases .... lb.	.75	.80	.70	.75	.55	.80
Powd, bbls ..... lb.	.80	.85	.75	.80	.60	.85
Ghatti, sol, bgs ..... lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs ... lb.	.14	.33	.14	.33	.14	.33
Kauri, NY						
Brown XXX, cases .... lb.	...	.60	...	60	.60	.60½
BX ..... lb.	...	.38	...	.38	...	.38
B1 ..... lb.	...	.28	...	.28	...	.28
B2 ..... lb.	...	.24	...	.24	...	.24
B3 ..... lb.	...	.18½	...	.18½	...	.18½
Pale XXX ..... lb.	...	.61	...	.61	...	.61
No. 1 ..... lb.	...	.41	...	.41	...	.41
No. 2 ..... lb.	...	.24	...	.24	...	.24
No. 3 ..... lb.	...	.17¾	...	.17¾	...	.17¾
Kino, tins ..... lb.	4.00	4.50	4.00	4.50	2.50	4.50
Mastic ..... lb.	1.20	1.25	.85	1.25	.55	.90
Sandarac, prime quality, 200 lb bgs & 300 lb cks... lb.	.40	.45	.35	.37	.15	.37
Senegal, picked bags ..... lb.	...	.30	...	.30	.25	.30
Sorts ..... lb.	...	.13	...	.13	.09¼	.13
Thus, bbls ..... 280 lbs.	15.00	15.25	15.00	15.25	13.50	15.25
Tragacanth, No. 1, cases.. lb.	...	3.50	2.65	3.50	2.25	2.50
No. 2 ..... lb.	...	3.35	2.55	3.35	1.90	2.40
No. 3 ..... lb.	...	2.90	2.45	2.90	1.60	2.25
Yucca, bgs ..... lb.	.03½	.04	.03½	.04	.03½	.08
H						
Helium, cyl (200 cu. ft.) cyl.	...	25.00	...	25.00	...	25.00
Hematine crystals, 400 lb bbls lb.	.20	.30	.20	.30	.20	.34
Hemlock, 25%, 600 lb bbls. wks ..... lb.	...	.03⅛	.03⅛	.03⅜	.03	.03⅜
tks ..... lb.	...	.02¾	.02¾	.03	.02⅝	.02¾
Hexalene, 50 gal drs, wks lb.	...	.30	...	.80	...	.30

Specify HEYDEN

FINE HEYDEN CHEMICALS

FORMALDEHYDE U.S.P.

37% by weight • 40% by volume

A water-white solution of full strength and high uniform purity.

Carboys • Drums • Tank Trucks
Tank Cars

PARAFORMALDEHYDE

U. S. P. X.

Powder • Small Flo-Granules
Large Granules

Fine white color and complete Solubility

HEXAMETHYLENAMINE

U. S. P. and Technical
Powder and Granular

Salicylic Acid
•
Methyl Salicylate
•
Creosote
•
Benzoate of Soda
•
Benzoic Acid
•
Benzyl Chloride
•
Benzaldehyde
•
Bromides

Write for Current Products List

HEYDEN Chemical Corporation

NEW YORK—50 UNION SQUARE
CHICAGO BRANCH—180 N. WACKER DRIVE
FACTORIES: GARFIELD, N. J.—FORDS, N. J.

MARINCO BRAND
MARINE
MAGNESIUM
PRODUCTS CORPORATION
(formerly) MARINE CHEMICALS COMPANY
Original Producers of
MAGNESIUM SALTS
Directly from SEA WATER
A dependable source of supply for
MAGNESIUM CARBONATES
HYDROXIDES, OXIDES
U.S.P. and Special Grades
Main Office, Plant and Laboratories
SOUTH SAN FRANCISCO, CALIFORNIA
NEW YORK OFFICE: Whittaker, Clark & Daniels, Inc. 260 West Broadway
CHICAGO OFFICE: Harry Holland & Son, Inc. 400 W. Madison St.
ST. LOUIS OFFICE: G. S. Robins & Co. 126 Chouteau Ave.

SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.
REG. U.S. PAT. OFF.
MURIATE OF POTASH
62/63% K_2O, ALSO 50% K_2O
MANURE SALTS
APPROXIMATELY 30% K_2O
UNITED STATES POTASH COMPANY
INCORPORATED
30 ROCKEFELLER PLAZA, NEW YORK, N. Y.

Hexane
Mangrove Bark

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Hexane, normal 60-70° C. Group 3, tks ....gal.	...	.10½	...	.10½	...	.10½
Hexamethylenetetramine, powd, drs ....lb.	.32	.33	.32	.33	.32	.36
Hexyl Acetate, secondary, delv, drs ....lb.	.13	.13½	.13	.13½	.13	.13½
tks ....lb.	...	.12	...	.12	...	.12
Hoof Meal, f.o.b. Chicago unit	2.25	2.40	2.50	3.15	2.50	3.25
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	...	.20	...	.20	.19½	.20
Hydroxylamine Hydrochloride ....lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls lb.	...	.14	...	.14	.13	.21
Indigo, Bengal, bbls ....lb.	1.63	1.67	1.63	1.67	...	2.40
Synthetic, liquid ....lb.	.16½	.19	.16½	.19	.16½	.19
Iodine, Resublimed, jars..lb.	...	2.25	2.25	2.50	1.75	2.00
Irish Moss, ord, bales ...lb.	.15	.16	.15	.16	.10	.10
Bleached, prime, bales ..lb.	.30	.32	.28	.32	.19	.20
Iron Acetate Liq. 17°, bbls delv ....lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.						
Nitrate, coml, bbls..100 lb.	2.75	3.00	2.75	3.00	2.32	3.11
Isobutyl Carbinol (128-132° C) drs, frt all'd ....lb.	...	.22½	.22½	.34	.33	.34
tks, frt all'd ....lb.	...	.21½	.21½	.32	...	.32
Isopropyl Acetate, tks, frt all'd ....lb.	...	.06	.05½	.06	.051	.06
drs, frt all'd ....lb.	.07	.07½	.06½	.07½	.061	.07
Ether, see Ether, isopropyl.						
Keiselguhr, dom bags, c-l, Pacific Coast ....ton	22.00	35.00	22.00	35.00	22.00	35.00
L						
Lead Acetate, f.o.b. NY, bbls, White, broken ....lb.	...	.11	...	.11	.10	.11
cryst, bbls ....lb.	...	.11	...	.11	.10	.11
gran, bbls ....lb.	...	.11¼	...	.11¼	.10¾	.11¼
powd, bbls ....lb.	...	.11¼	...	.11¼	.10¾	.11¼
Arsenate, East, drs ...lb.	...	.08½	.08½	.11	.10	.11½
Linoleate, solid, bbls...lb.	...	.19	...	.19	...	.19
Metal, c-l, NY ....100 lb.	4.90	4.95	4.90	5.25	4.75	5.55
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.10	.12
Oleate, bbls ....lb.	.18½	.20	.18½	.20	.18½	.20
Red, dry, 95% Pb_3O_4, delv ....lb.	...	.07¾	.07½	.08	.07¼	.08½
97% Pb_3O_4, delv ...lb.	...	.079	.0765	.08¼	.07½	.0835
98% Pb_3O_4, delv ...lb.	...	.0815	.08	.08¾	.07¾	.0860
Resinate, precip, bbls..lb.	...	.16½	...	.16½	...	.16½
Stearate, bbls ....lb.	...	.25	...	.26	.22	.25
Titanate, bbls, c-l, f.o.b. wks, frt all'd ....lb.	.10	.10¼	.10	.10¼	.11	.11½
White, 500 lb bbls, wks, lb.	...	.07¼	.07	.07¼	...	.07
Basic sulfate, 500 lb bbls, wks ....lb.	...	.06½	.06¼	.06½	...	.06¼
Lime, chemical quicklime, f.o.b., wks, bulk ....ton	7.00	13.00	7.00	13.00	7.00	8.00
Hydrated, f.o.b. wks...ton	8.50	16.00	8.50	16.00	8.50	12.00
Lime Salts, see Calcium Salts						
Lime, sulfur, dealers, tks..gal.	...	.07½	.07½	.11½	.08	.11½
drs ....gal.	.10	.14	.11	.16	.11	.16
Linseed Meal, bgs ....ton	25.00	25.50	24.50	37.00	34.00	42.00
Litharge, coml, delv, bbls lb.	.06¾	.07¼	.06½	.07¼	.06¼	.071
Lithopone, dom, ordinary, delv, bgs ....lb.	...	.036	...	.036	.03¾	.04½
bbls ....lb.	...	.0385	.03¾	.03¾	.04	.04⅜
High strength, bgs ....lb.	...	.05	...	.05	.05¼	.05½
bbls ....lb.	...	.05¼	...	.05¼	.05½	.05⅝
Titanated, bgs ....lb.	...	.05	...	.05	.05¼	.05½
bbls ....lb.	...	.05¼	...	.05¼	.05½	.05⅝
Logwood, 51°, 600 lb bbls lb.	.10½	.12½	.10½	.12½	.09½	.12½
Solid, 50 lb boxes ....lb.	.16½	.20½	.16½	.20½	.15	.20½
M						
Madder, Dutch ....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbls ton	60.00	65.00	58.00	66.00	58.00	66.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	...	.06¼	...	.06¼	.05¾	.06½
Chloride flake, 375 lb bbls, c-l, wks ....ton	...	32.00	32.00	42.00	39.00	42.00
Fluosilicate, crys, 400 lb bbls, wks ....lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, calc tech, heavy bbls, frt all'd ....lb.	...	.26	.25	.30	.25	.30
Light bbls above basis lb.	...	.26	.20	.26	.20	.25
USP Heavy, bbls, above basis ....lb.	...	.26	.25	.30	.25	.30
Palmitate, bbls ....lb.	.33	nom.	.33	nom.	.33	nom.
Silicofluoride, bbls ....lb.	.11	.11½	.11	.11½	.09½	.11½
Stearate, bbls ....lb.	.23	.26	.24	.27	.21	.24
Manganese, acetate, drs...lb.	...	.26½	...	.26½	...	.26½
Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.16	.15	.16
Chlorate, 600 lb cks....lb.	...	.08½	...	.08½	.07½	.12
Dioxide, tech (peroxide), paper bags, c-l ....ton	...	62.50	62.50	66.50	47.50	66.50
Hydrate, bbls ....lb.	...	.82	...	.82	...	.32
Linoleate, liq, drs ....lb.	.18	.19½	.18	.19½	.18	.19¼
solid, precip, bbls ....lb.	...	.19	...	.19	...	.19
Resinate, fused, bbls ...lb.	.08¼	.08½	.08¼	.08½	.08¼	.08½
precip, drs ....lb.	...	.12	...	.12	...	.12
Sulfate, tech, anhyd, 90-95%, 550 lb drs ...lb.	.09	.09½	.08	.09½	.07	.08½
Mangrove, 55%, 400 lb bbls lbs.						.04
Bark, African ....ton	36.50	37.50	30.00	39.50	23.00	35.00

Current

Mannitol
Nutgalls Alleppo

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Mannitol, pure cryst, cs, wks lb.	...	.90	.90	1.00	.95	1.20
commercial grd, 250 lb bbls lb.	.38	.45	.38	.50	.42	.57
Marble Flour, blk ton	12.00	14.00	12.00	14.00	12.00	14.00
Mercury chloride(Calomel) lb.	...	2.95	2.45	2.95	1.36	2.57
Mercury metal ..76 lb. flasks	183.00	186.00	190.00	228.50	95.00	170.00
Mesityl Oxide, f.o.b. dest., tks lb.	...	.15	...	.15	.10½	.15
drs, c-l lb.	...	.16	...	.16	.11½	.16
drs, lcl lb.	...	.16½	...	.16½	.12	.16½
Meta-nitro-aniline lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls lb.	1.05	1.10	1.05	1.40	1.30	1.55
Meta-phenylene diamine 300 lb bbls ib.	...	.65	...	.65	.80	.84
Meta-toluene-diamine 300 lb bbls lb.	...	.65	.65	.67	.65	.67
Methanol, denat, grd, drs. c-l frt all'd gal.	...	.45	...	.45	.41	.46
tks, frt all'd gal.	...	.40	...	.40	.35	.40
Pure, drs, c-l, frt all'd' gal.	...	.35½	.35	.38	...	.38
tks gal.	...	.30	.30	.33	...	.33
95%, tks gal.	...	.29	.28	.31	...	.31
97%, tks gal.	...	.30	.29	.32	...	.32
Methyl Acetate, tech tks, delv lb.	.06	.07	.06	.07	.06	.06½
55 gal drs, delv lb.	.07	.08	.07	.08	.07	.08
C.P. 97-99%, tks, delv lb.	.09½	10½	.09½	.10½	...	.06¼
55 gal drs, delv lb.	.10½	.11½	.10½	.11½	.07¼	.07¾
Acetone, frt all'd, drs gal. *p*	...	.37½	.41	.44	.30	.44
tks, frt all'd gal. *p*	...	.32	.35	.39	.25	.35
Synthetic, frt all'd, east of Rocky M., drs gal. *p*	...	.36	.36	.44	.38	.41
tks, frt all'd gal.	...	.34	.34	.36	...	.31½
West of Rocky M., frt all'd, drs gal. *p*	...	.48	.42	.48	...	.42
tks, frt all'd gal. *p*	...	.45½	.35	.45½	...	.35
Anthraquinone lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb lots, frt all'd lb.	...	.70	...	.70	...	...
less than 100 lbs. f.o.b. wks lb.	...	.75	...	.75	...	...
Chloride, 90 lb. cyl lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks, frt all'd lb.	...	.06	.05½	.06	.05	.05½
50 gal drs, frt all'd' c-l lb	.07	.07½	.06½	.07½	.06	.07
Formate, drs, frt all'd lb.	...	.89	...	.89	.35	.39
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd lb.	...	.80	...	.80	...	.30
Mica, dry grd, bgs, wks ton	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs lb.	...	2.50	...	2.50	...	2.50
Monoamylamine, c-l, drs, wks lb.	...	.52	...	.52	...	.52
lcl, drs, wks lb.	.53	.55	.53	.55	...	...
tks, wks lb.	...	.50	...	.50	...	...
Monobutylamine, drs, c-l, wks lb.	...	.50	...	.50	.50	.65
lcl, wks lb.	.51	.53	.51	.53	...	...
tks, wks lb.	...	.48	...	.48	...	...
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks lb.	...	.65	...	.65	...	...
Monomethylamine, drs, frt all'd, E Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, lcl wks lb.	...	.75	...	.75	...	...
Myrobalans 25%, liq bbls lb.	no prices		no prices		.03¼	.04¼
50% Solid, 50 lb boxes lb.	no prices		no prices		.04¼	.05
J1 bgs ton	...	40.00	28.50	40.00	24.00	50.00
J2 bgs ton	...	34.00	23.00	34.00	19.00	41.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-wht, tks gal.	...	.26	.26	.27	.26	.27
drs, c-l gal.	...	.31	.31	.32	.31	.32
Naphthalene, dom, crude bgs. wks lb.	2.25	2.50	2.25	2.75	2.25	2.85
imported, cif, bgs lb.	no prices		...	3.00	1.50	1.85
Balls, flakes, pks lb.	.06¼	.07¾	.06¼	.07¾	.06½	.07½
Balls, ref'd, bbls, wks lb.	...	.07	.06¾	.07	.05¾	.06¾
Flakes, ref'd, bbls, wks lb.	...	.07	.06¾	.07	.05¾	.06¾
Nickel Carbonate, bbls lb.	.36	.36½	.36	.36½	.36	.37½
Chloride, bbls lb.	.18	.20	.18	.20	.18	.20
Metal ingot lb.	.34	.36	.34	.35	...	.35
Oxide, 100 lb kgs, NY lb.	.35	.38	.35	.38	.35	.37
Salt, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, 40%, drs, sulfate, 55 lb drs lb.	...	.70	...	.70	.70	.76
Nitre Cake, blk ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled, 1000 lb drs, wks lb.	.08	.09	.08	.10	.08	.10
tks lb.	...	.07	...	.07	.07	.07½
Nitrocellulose, c-l, lcl, wks lb.	.20	.29	.20	.29	.22	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158	...	1.2158
Nitrogenous Mat'l, bags imp unit	no prices		2.20	2.60	2.25	2.85
dom, Eastern wks unit	...	2.20	2.20	2.90	2.30	3.00
dom. Western wks unit	...	1.75	1.95	2.00	1.90	2.25
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs lb.	.26	.29	.29	.30	.22	.23

a Country is divided in 4 zones, prices varying by zone; *p* Country is divided into 4 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila., or N. Y.

Some of the properties of DIGLYCOL LAURATE are so unusual that new and important uses have resulted in many fields. It has solved numerous problems for manufacturers of textiles, polishes, cosmetics, paper, rubber, leather, and other products.

Now three grades of DIGLYCOL LAURATE increase the applications of this useful material.

	Diglycol Laurate S	*Glaurin*	*Diglycol Dilaurate* (S235)
Consistency	yellow oil	yellow oil	amber-colored oil
Specific gravity	0.96	0.96	0.92
Acid value	< 2	< 8	8
Free fatty acid	< 0.5%	< 3%	< 3%
Saponification value	172-176	185-195	234-236
Iodine value	9-11	5-8	11-12
pH (5% in water)	9.2-9.5	.....	.....
Titre	9-11° C.	17-18° C.	21-22° C.
Solubility in			
Water	D	ND	ND
Methanol	S	S	SX
Ethanol	S	S	S
Toluol	S	SX	S
Naphtha	S	PS	S
Mineral Oil	S	SX	S
Cottonseed Oil	SX	SX	S
Acetone	SX	S	S
Ethyl Acetate	SX	S	S

Key: S = Soluble
D = Dispersible
ND = Not dispersible
SX = Clearly miscible in certain proportions
PS = Partially soluble

The quickest way to discover what these modern agents can do for YOU is to try them! They are available in the following units:

400 lb. drums
48 lb. cans
8 lb. cans
2 lb. trial bottles

GLYCO PRODUCTS COMPANY INC.

148 Lafayette St. (Dept. 25) New York, N. Y.

Come to Glyco For

Diglycol Laurate S	Sorbitol Stearate S
Diglycol Stearate S	Sorbitol Oleate S
Diglycol Oleate S	Sorbitol Laurate S
Glyceryl Monostearate S	Methyl Stearate
Glyceryl Laurate S	Methyl Oleate

Send for our latest catalogue—96 pages packed with information about these and other special fatty acid esters.

PERSONALIZED TOUCH
in
Chemical Buying

JAPAN WAX

Our long years of experience in serving consumers of this product and the close personal attention we give to every inquiry mean for you prices that are right . . . quality the best obtainable . . . and delivery when you want it.

A telephone call, telegram or letter will have our instant attention.

H. H. ROSENTHAL CO., INC.
25 EAST 26th STREET NEW YORK
Cable address: Rodrug Tel. AShland 4-7500

Oldbury
Electro-Chemical
Company

PHOSPHORIC (U.S.P.) ACID
•
PHOSPHORUS OXYCHLORIDE
•
PHOSPHORUS PENTACHLORIDE
•
PHOSPHORUS PENTASULFIDE
•
PHOSPHORUS TRICHLORIDE

Plant and Main Office:
Niagara Falls, New York
New York Office: 22 E. 40th St., New York City

Oak Bark Extract
Phloroglucinol

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Oak Bark Extract, 25%, bbls lb.	.03½	.03½	.03½	.03½	.03½
tks lb.	...	.02¾	.02¾	...	.02¾
Octyl Acetate, tks, wks lb.	...	.15	.15	.15	.17
Orange-Mineral, 1100 lb cks NY lb.	.10¾	.11¾	.10½	.12	.10¼ .10¾
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15 2.25
Orthoanisidine, 100 lb drs lb.	...	.70	.70	.74	.70 .74
Orthochlorophenol, drs lb.	...	.32	...	.32	... .32
Orthocresol, 30.4°, drs, wks lb.	.16	.16½	.16	.16½	.14½ .17½
Orthodichlorobenzene, 1000 lb drs lb.	.06	.07	.06	.07	.06 .07
Orthonitrochlorobenzene, 1200 lb drs, wks lb.	.15	.18	.15	.18	.15 .18
Orthonitroparachlorphenol, tins lb.	...	.75	...	.75	... .75
Orthonitrophenol, 350 lb drs lb.	.85	.90	.85	.90	.85 .90
Orthonitrotoluene, 1000 lb drs, wks lb.	...	.09	...	.09	.08 .10
Orthotoluidine, 350 lb bbls, lcl lb.	...	.19	...	.19	.16 .19
Osage Orange, cryst, bbls lb.	...	.21	...	.21	.17 .25
51° liquid lb.	...	.10	...	.10	.07 .09
P					
Paraffin, rfd, 200 lb bgs 122-127° M P lb.	.02¼	.057	.02¼	.0675	.03¾ .0634
128-132° M P lb.	.057	.0595	.057	.0705	.04 .0705
133-137° M P lb.	.06¼	.07¼	.06¼	.0755	.0465 .0755
Para aldehyde, 99%, tech, 110-55 gal drs, wks lb.	.10	.11¼	.10	.11¼	.10 .16*
Aminoacetanilid, 100 lb kgs lb.	...	.85	...	.85	... .85
Aminohydrochloride, 100 lb kgs lb.	1.25	1.30	1.25	1.30	1.25 1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	... 1.05
Chlorophenol, drs lb.	...	.32	...	.32	.30 .45
Dichlorobenzene 200 lb drs, wks lb.	.11	.12	.11	.12	.11 .12
Formaldehyde, drs, wks lb.	.34	.35	.34	.35	.34 .35
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45 .52
Nitroaniline, 300 lb bbls, wk lb.	...	.47	...	.47	.45 .47
Nitrochlorobenzene, 1200 lb drs, wks lb.	...	.15	.15	.16	.15 .16
Nitro-orthotoluidine, 300 lb bbls lb.	2.75	2.85	2.75	2.85	2.75 2.85
Nitrophenol, 185 lb bbls lb.	...	.35	.35	.37	.35 .37
Nitrosodimethylaniline, 120 lb bbls lb.	.92	.94	.92	.94	.92 .94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	.30 .35
Phenylenediamine, 350 lb bbls lb.	1.25	1.30	1.25	1.30	1.25 1.30
Toluenesulfonamide, 175 lb bbls lb.	...	.70	.70	.75	.70 .75
tks, wks lb.	...	.31	...	.31	... .31
Toluenesulfonchloride, 410 lb bbls, wks lb.	.20	.22	.20	.22	.20 .22
Toluidine, 350 lb bbls, wks lb.	...	.48	.48	.50	.48 .58
Paris Green, dealers, drs lb.	.23	.25	.23	.26	.23 .26
Pentane, normal, 28-38° C, group, 3 tks gal.	...	.08½	...	.08½	... .08½
drs, group 3 gal.	.11½	.16	.11½	.16	.11½ .16
Perchlorethylene, 100 lb drs, frt all'd lb.	.08	.08½	.08	.08¾	.08 .10½
Petrolatum, dark amber, bbls. lb.	...	.02¾	.02¾	.05	.02⅝ .05
White, lily, bbls lb.	...	.04¾	.04¾	.08½	.05¼ .08½
White, snow, bbls lb.	...	.05½	.05½	.09½	.06¼ .09½
Petroleum Ether, 30-60°, group 3, tks gal.	...	.13½	...	.13½	.13 .13½
drs, group 3 gal.	.14½	.25½	.14½	.25½	.14 .25½
PETROLEUM SOLVENTS AND DILUENTS					
Cleaners naphthas, group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜ .07
East Coast, tks wks gal.	.09	.10½	.09	.10½	.09 .10
Lacquer diluents, tks, East Coast gal.	.09½	.10	.09½	.10	.09 .12½
Group 3, tks gal.	...	.07⅜	...	.07⅞	.07⅜ .08
Naphtha, V.M.P., East tks, wks gal.	.09½	.10	.09½	.10	.09 .10
Group 3, tks, wks gal.	...	.06⅞	.06⅜	.07⅞	.06⅜ .07
Petroleum thinner, 43-47, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½ .10
Group 3, tks, wks gal.	...	.05⅞	.05⅞	.07	.05⅜ .06
Rubber Solvents, stand grd, East, tks, wks gal.	...	.09½	...	.09½	.09 .10
Group 3, tks, wks gal.	.06⅞	.07	.06⅞	.07	.06⅜ .07
Stoddard Solvents, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½ .10
Group 3, wks gal.	.06⅜	.06½	.06⅜	.06½	.05⅞ .06½
Phenol, 250-100 lb drs lb.	.13	.14¾	.13	.14¾	.13 .15½
tks, wks lb.	...	.12	...	.12	.12 .13½
Phenyl-Alpha-Naphthylamine, 100 lb kgs lb.	...	1.35	...	1.35	... 1.35
Phenyl Chloride, drs lb.	...	.17	...	.17	... .17
Phenylhydrazine Hydrochloride, com lb.		1.50	...	1.50	... 1.50
Phloroglucinol, tech, tins lb.	15.00	16.50	15.00	16.50	15.00 16.50
CP, tons lb.	20.00	22.00	20.00	22.00	20.00 22.00

* These prices were on a delivered basis.

Current

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Phosphate Rock, f.o.b. mines					
70% basis ton	...	2.15	1.85	1.90	... 1.85
72% basis ton	...	2.40	2.15	2.35	... 2.35
Florida Pebble, 68% basis ton	...	1.90	1.90	2.85	... 2.85
75-74% basis ton	...	2.90	2.90	3.85	... 3.85
75% basis ton	...	5.50	...	5.50	... 5.50
Tennessee, 72% basis ton	...	4.50	...	4.50	... 4.50
Phosphorus Oxychloride 175 lb cyl lb.	.15	.18	.15	.20	.16 .20
Red, 110 lb cases lb.	.40	.44	.40	.44	.40 .44
Sesquisulfide, 100 lb cs. lb.	.38	.42	.38	.44	.38 .44
Trichloride, cyl lb.	.15	.16	.15	.18	.15 .18
Yellow, 110 lb cs, wks lb.	.18	.20	.18	.20	.24 .30
Phthalic Anhydride, 100 lb drs, wks lb.	.14½	.15½	.14½	.15½	... .14½
Pine Oil, 55 gal drs or bbls					
Destructive dist lb.	.50	.55	.53	.56	.46 .48
Steam dist wat wh bbls gal.	...	.59	...	.59	... .59
tks gal.	...	.54	...	.54	... .54
Pitch Hardwood, wks ton	23.75	24.00	23.75	24.00	23.75 24.00
Coaltar, bbl, wks ton	...	19.00	...	19.00	... 19.00
Burgundy, dom, bbls, wks lb.	.05½	.06½	.05½	.06½	.05½ .06½
Imported lb.	no prices		no prices		.15 .16
Petroleum, see Asphaltum in Gums' Section.					
Pine, bbls bbl.	6.00	6.50	6.00	6.50	6.00 6.25
Platinum, ref'd oz.	35.00	38.00	35.00	40.00	32.00 40.00
POTASH					
Potash, Caustic, wks, sol. lb.	.06¼	.06¾	.06¼	.06¾	.06¼ .06½
flake lb.	.07	.07½	.07	.07½	.07 .07⅜
liquid, tks lb.	...	.03⅞	.02⅞	.03¾	... .02⅞
Manure Salts, imported 30% basis, blk unit	no prices		...	.58½	... .58½
Potassium Abietate, bbls lb	...	.08	.08	.09	... .09
Acetate, tech, bbls, delv lb.	...	.26	...	.26	... .26
Bicarbonate, USP, 320 lb bbls lb.	...	.18	...	.18	... .18
Bichromate Crystals, 725 lb cks* lb.	.08⅞	.09¼	.08¾	.09¼	.08¾ .09¼
Binoxalate, 30 lb bbls lb.	...	.23	...	.23	... .23
Bisulfate, 100 lb kgs lb.	.15½	.18	.15½	.18	.15½ .18
Carbonate, 80-85% calc 800 lb cks lb.	.06½	.06¾	.06½	.07	.06½ .07
liquid, tks lb.	...	.0275	.0275	.03	... .02⅞
drs, wks lb.	.03	.03⅛	.03	.03½	.03 .03½
Chlorate crys, 112 lb kgs, wks lb.	.10½	.17	.10½	.13	.09¼ .13
gran, kgs lb.	.12	.14½	.12	.14½	.12 .14½
powd, kgs lb.	.10	.17	.10	.12½	.08½ .12½
Chloride, crys, bbls lb.	.04	nom.	.04	.04¾	.04 .04¾
Chromate, kgs lb.	.24	.27	.24	.27	.19 .28
Cyanide, 110 lb cases lb.	no prices		no prices		.50 .55
Iodide, 250 lb bbls lb.	...	1.35	...	1.35	1.13 1.35
Metabisulfite, 300 lb bbls lb.	nom.	.15	.13	.15	.11 .18
Muriate, bgs, dom, blk unit	...	.53½	...	.53½	... .53½
Oxalate, bbls lb.	.25	.26	.25	.26	.25 .26
Perchlorate, kgs, wks lb.	.09½	.11	.09½	.11	.09 .10½
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19	.18½	.19½	.18½ .19½
Prussiate, red, bbls lb.	nom.	.45	.38	.45	.30½ .45
Yellow, bbls lb.	.17	.19	.15	.16	.14 .16
Sulfate, 90% basis, bgs ton	no prices		...	36.25	36.25 38.00
Titanium Oxalate, 200 lb bbls lb.	.40	.45	.40	.45	.35 .45
Pot & Mag Sulfate, 48% basis bgs ton	no prices		...	24.75	24.75 25.75
Propane, group 3, tks lb.	.03¾	.04	.03	.04⅛	.03 .04⅛
Putty, com'l, tubs 100 lb.	...	3.15	...	6.00	3.00 6.00
Linseed Oil, kgs 100 lb.	...	5.00	...	4.50	... 4.50
Pyrethrum, conc liq:					
2.4% pyrethrins, drs, frt all'd gal.	...	4.95	4.95	7.50	5.75 7.50
3.6% pyrethrins, drs, frt all'd gal.	...	7.35	7.35	11.00	8.45 11.00
Flowers, coarse, Japan, bgs lb.	.23	.24	.23	.36	.26 .36
Fine powd, bbls lb.	.25	.26	.25	.37	.27 .37
Pyridine, denat, 50 gal drs gal.	...	1.71	...	1.71	1.63 1.71
Refined, drs lb.	...	.51	...	.51	.50 .51
Pyrites, Spanish cif Atlantic ports, blk unit	.12	.13	.12	.13	.12 .13
Pyrocatechin, CP, drs, tins lb.	2.15	2.40	2.15	2.40	2.15 2.75
Q					
Quebracho, 35% liq tks lb.	...	.03½	.03¼	.03½	.02⅞ .03¼
450 lb bbls, c-l lb.	...	.04	...	.04	.04 .04⅛
Solid, 63%, 100 lb bales cif lb.	...	.04½	...	.04½	.04 .04½
Clarified, 64% bales lb.	...	.04¾	...	.04¾	.04¼ .04¾
Quercitron, 51 deg liq, 450 lb bbls lb.	.08½	.09½	.08½	.09½	.07½ .08½
Solid, drs lb.	.11	.16½	.10	.16½	.10 .12
R					
R Salt, 250 lb bbls, wks lb.	...	.55	...	.55	... .55
Resorcinol, tech, cans lb.	.68	.74	.75	.80	.75 .80
Rochelle Salt, cryst lb.	.25¾	.26¼	.22¼	.23¼	.17¾ .21¾
Powd, bbls lb.	.24¾	.25¼	.21¾	.22¼	.16¾ .20¼
Rosin Oil, bbls, first run gal.	.45	.50	...	.50	.45 .47
Second run gal.	.51	.56	.52	.56	.47 .49
Third run, drs gal.	.52	.57	.56	.57	.51 .53
Rosins 600 lb bbls, 100 lb unit ex. yard NY:***					
B	...	1.80	...	1.80	4.60 5.45
D	...	1.90	1.87	1.90	4.95 5.70
E	...	2.16	1.95	2.16	5.20 6.40
F	...	2.38	2.10	2.38	5.50 6.75
G	...	2.42	2.10	2.42	5.75 7.00
H	...	2.42	2.10	2.42	5.75 7.10
I	...	2.42	2.10	2.42	5.77½ 7.20

* Spot prices are ⅛c higher; *** Aug. 30, 1939, high and low based on 280 lb. unit.

S&W NATURAL RESINS

NATURAL RESINS, as raw materials, are as old as the varnish art itself. The resins are available in a continuous series as regards solubility, hardness and color and therefore offer the formulator a wide choice. Some of these resins are processed at our plants, under rigid control. The scarcity of china-wood oil makes the use of certain of these processed naturals particularly desirable now.

From many years of experience, involving world-wide coordination, the Stroock & Wittenberg Corporation has established connections to safeguard careful selection, grading and packing. Representative retained samples and warehouse stocks round out a comprehensive service.

Accroides	Elemi
Batu	Kauri
Batavia Damars	Loba
Singapore Damars	Manila
Black East Indies	Pontianak
Pale East Indies	Mastic
Congo Gums	Sandarac

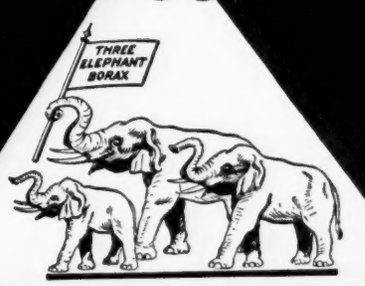
THE COMPLETE RESIN LINE

"S&W"ESTER GUM—all types
"AROFENE"—pure phenolics
"CONGO GUM"—fused and esterified
"AROCHEM"—modified types
"AROPLAZ"—alkyds
NATURAL RESINS—all standard grades

®Registered U. S. Pat. Office

STROOCK & WITTENBERG Corporation
LINCOLN BUILDING NEW YORK

Specify



THREE ELEPHANT
BORAX-BORIC ACID

POTASH TRONA SALTS
MURIATE OF POTASH
Stocks carried in principal cities of United States and Canada

AMERICAN POTASH & CHEMICAL CORP.
70 PINE STREET NEW YORK

DIACETONE
MESITYL OXIDE
METHYL ETHYL KETONE
METHYL ISOBUTYL KETONE

•

Selling Agents For Shell Chemical Company

R.W. GREEFF & CO.
10 ROCKEFELLER PLAZA, NEW YORK CITY

GUMS

GUM ARABIC
GUM KARAYA
(INDIAN GUM)
GUM TRAGACANTH
LOCUST BEAN GUM
(CAROB FLOUR)
• • •
JAPAN WAX

Let us quote on your requirements

NEW ENGLAND REP.
G. H. BUNTON
CAMBRIDGE, MASS.
×
PHILADELPHIA REP.
R. PELTZ & CO.
36 KENILWORTH ST.,
TEL: LOMBARD 6359

PAUL A. DUNKEL & CO., INCORPORATED
82 WALL ST. NEW YORK, N.Y. Hanover 2-3750

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Rosins (continued)					
K	...	2.42	2.12	2.42	5.80	7.20
M	...	2.46	2.21	2.46	5.90	7.25
N	2.51	2.62	2.39	2.62	6.75	7.40
WG	...	2.90	2.68	2.90	6.95	7.70
WW	...	3.09	3.00	3.09	7.45	8.50
Rosins, Gum, Savannah (280 lb unit):**						
B	...	1.15	...	1.15	3.25	4.00
D	...	1.33	1.22	1.33	3.55	4.30
E	...	1.50	1.30	1.50	3.80	5.00
F	...	1.73	1.45	1.73	4.00	5.35
G	...	1.79	1.45	1.79	4.40	5.70
H	...	1.79	1.45	1.79	4.40	5.70
I	...	1.79	1.45	1.79	4.40	5.80
K	...	1.79	1.47	1.79	4.40	5.80
M	...	1.83	1.56	1.83	4.40	5.85
N	...	1.99	1.74	1.99	5.10	6.00
WG	...	2.28	2.03	2.28	5.60	6.30
WW	...	2.44	2.25	2.44	6.05	7.10
X	...	2.44	2.35	2.44	5.60	7.10
Rosin, Wood, c-l, FF grade, NY	...	1.44	...	1.44	5.35	6.80
Rotten Stone, bgs mines ton	25.50	37.50	25.50	37.50	22.50	37.50
Imported, lump, bbls...lb.	no prices		...	.14	...	.14
Powdered, bbls .....lb.	no prices		.08½	.10	.08½	.10
S						
Sago Flour, 150 lb bgs..lb.	.04	nom.	.04	.04½	.02½	.04½
Sal Soda, bbls wks...100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l. bulk wks .....ton	...	17.00	...	17.00	19.00	25.00
Chrome, c-l, wks .....ton	...	16.00	11.00	16.00	11.00	12.00
Saltpetre, gran, 450-500 lb bbls .....lb.	...	.071	...	.071	.06½	.069
Cryst, bbls .....lb.	...	.081	...	.081	.07½	.0865
Powd, bbls .....lb.	..	.081		.081	.07½	.079
Satin, White, pulp, 550 lb bbls .....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs .....lb.	...	.46	.46	.48	.46	.48
Shellac, Bone dry, bbls..lb. *s*	.25	.26	.25	.26	.18	.26
Garnet, bgs .....lb.	..	.19½	.19	.23	.12½	.20
Superfine bgs .....lb. *s*	.14½	.18	.14½	.20½	.10	.21
T. N., bgs .....lb. *s*	.14	.17	.13½	.19½	.09½	.20
Silver Nitrate, vials .....oz.	...	.26⅞	.26⅞	.27⅜	.26⅞	.33½
Slate Flour, bgs, wks....ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks .....100 lb.	...	1.10	...	1.10	...	1.10
58% light, bgs .....100 lb.	1.05	1.08	1.05	1.08	...	1.08
blk .....100 lb.	...	.90	...	.90	...	.90
paper bgs .....100 lb.	...	1.05	...	1.05	...	1.05
bbls .....100 lbs.	..	1.35	...	1.35	...	1.35
Caustic, 76% grnd & flake, drs .....100 lb.	...	2.70	...	2.70		2.70
76% solid, drs.....100 lb.	...	2.30	...	2.30	2.10	2.30
Liquid sellers, tks...100 lb.	...	1.95	1.95	1.97½	...	1.97½
Sodium Abietate, drs ....lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran. powd, flake, 450 lb bbls wks .....lb.	.04	.05	.04	.05	.04	.05
90%, bbls, 275 lb delv lb.	.06	.06¾	.06	.06¾	...	...
anhyd, drs, delv .....lb.	...	.08½	.09	.08¼	.10	.08¼
Alginate, drs .....lb.	...	.70	.70	.96	.70	.95
Antimoniate, bbls .....lb.	.14½	.15	.14½	.15	.11½	.16
Arsenate, drs .....lb.	.07	.08¾	.07	.08¾	.08	.08½
Arsenite, liq, drs ....gal.	...	.35	...	.35	.30	.35
Dry, gray, drs, wks..lb.	.06½	.09¼	.06½	.09½	.07½	.09½
Benzoate, USP kgs ....lb.	.46	.50	.46	.52	.46	.48
Bicarb, powd, 400 lb bbl, wks .....100 lb.	...	1.70	1.70	1.85	...	1.85
Bichromate, 500 lb cks, wks* .....lb.	.06⅞	.07¼	.06¾	.07¼	.06¾	.07¼
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.031	.036
35-40% sol bbls,wks 100 lb.	1.30	1.80	1.40	1.80	1.40	1.80
Chlorate, bgs, wks .....lb.	...	.06¼	.06¼	.08½	.06¼	.07½
Cyanide, 96-98%, 100 & 250 lb drs, wks .....lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv .....lb.	.08½	.09	.08½	.09	...	.09
Fluoride, white 90%, 300 lb bbls, wks .....lb.	.07	.08	.07	.08	.07	.08¾
Hydrosulfite, 200 lb bbls, f.o.b. wks .....lb.	.16	.17	.16	.17	.16	.17
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	...	2.80	2.80	3.05	...	2.80
Tech, reg cryst, 375 lb bbls, wks .....100 lb.	2.45	...	2.45	2.80	2.45	2.80
Iodide, jars .....lb.	...	2.42	2.30	2.42	...	2.30
Metanilate, 150 lb bbls..lb	.41	nom.	.41	.42	.41	.42
Metasilicate, gran, c-l, wks .....100 lb.	...	2.35	...	2.35	2.20	2.35
cryst, drs, c-l, wks 100 lb.	...	3.05	...	3.05	2.90	3.05
Monohydrated, bbls ...lb.	...	.023	...	.023	...	.023
Naphthenate, drs .....lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	.50	.54
Nitrate, 92% crude, 200 lb bgs, c-l, NY .....ton	...	28.30	...	28.30	...	28.30
100 bgs, same basis .ton	...	29.00	...	29.00	...	29.00
Bulk .....ton	...	27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls ....lb.	.06¾	.11½	.06¾	.11½	.06¾	.11½
Othochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l .....lb.	...	.03	...	.03	...	.03
Perborate, drs, 400 lb ..lb.	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case; *s* T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. *Spot price is ⅛c higher. ** July 31, 1939, high and low based on 280 lb. unit.

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Sodium (continued):					
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	...	2.30	...	2.30	2.05	2.30
bgs, wks .....100 lb.	...	2.10	...	2.10	1.85	2.10
Tri-sodium, tech, 325 lb. bbls, wks .....100 lb.	...	2.45	...	2.45	2.20	2.45
bgs, wks .....100 lb.	...	2.25	...	2.25	2.00	2.25
Picramate, 160 lb kgs..lb.	...	.65	.65	.67	.65	.67
Prussiate, Yellow, 350 lb. bbls, wks .....lb.	.09½	.09¾	.09½	.09¾	.09½	.10¾
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq lb.	...	.0530	...	.0530	...	.0530
Sesquisilicate, drs, c-l, wks .....100 lb.	...	2.90	...	2.90	2.80	2.90
Silicate, 60°, 55 gal drs, wks .....100 lb.	1.40	1.80	1.40	1.80	1.65	1.70
40°, 55 gal drs, wks 100 lb	...	.80	...	.80	...	.80
tks, wks .....100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY .....lb.	no prices		no prices		.03½	.04¾
Stannate, 100 lb drs ...lb.	no prices		.31½	.34½	.30	.35
Stearate, bbls .....lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls lb.	.16	.18	.16	.18	.16	.18
Sulfate, Anhyd, 550 lb bgs c-l, wks .....100 lb. #	1.45	1.65	1.45	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, wks .....lb.	.02¼	.03	.02¼	.03	.02¼	.02½
Solid, 650 lb drs, c-l, wks .....lb.	.03	.03¾	.03	.03¾	.03	.03½
Sulfite, powd, 400 lb bbls wks .....lb.	...	.05¼	.023	.05¼	.023	.02½
Sulfocyanide, drs .....lb.	.28	.47	.28	.47	.28	.47
Sulforicinoleate, bbls....lb.	...	.12	...	.12	...	.12
Supersilicate (see sodium sesquisilicate)						
Tungstate, tech, crys, kgs lb.	no prices		no prices		1.05	1.10
Sorbitol, com, solut, wks c-l, drs, wks .....lb.	...	.14¾	.14¾	.16	...	.15½
Spruce, Extract, ord, tks..lb.	...	.01⅝	...	.01⅝	...	.01⅝
Ordinary, bbls .....lb.	...	.01⅝	...	.01⅝	...	.01⅝
Super spruce ext, tks...lb.	...	.01⅜	...	.01⅜	...	.01⅜
Super spruce ext, bbls..lb.	...	.01⅞	...	.01⅞	...	.01⅞
Super spruce ext. powd, bgs .....lb.	...	.04	...	.04	...	.04
Starch, Pearl,140 lb bgs100 lb.	...	2.90	2.50	2.80	2.40	2.85
Powd, 140 lb bgs ...100 lb.	...	3.00	2.60	2.90	2.50	2.90
Potato, 200 lb bgs .....lb.	.06½	.07½	.05	.07½	.04	.06¾
Imp, bgs .....lb.	no prices		...	.06½	.05	.06½
Rice, 200 lb bbls .....lb.	.07½	.08½	.07¼	.08½	.06¼	.07¼
Sweet Potato, 240 lb bbls, f.o.b. plant .....100 lb.	nom.	6.75	5.50	6.75	5.50	7.50
Wheat, thick, bgs .....lb.	...	.05¼	.05¼	.05½	.05	.05½
Strontium, carbonate, 600 lb bbls, wks .....lb.	no prices		.22	.23	.16	.24
Nitrate, 600 lb bbls, NY lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¼
Sucrose, octa-acetate, den, grd, bbls, wks .....lb.	...	.45	...	.45	...	.45
tech, bbls, wks .....lb.	...	.40	...	.40	...	.40
Sulfur, crude, f.o.b. mines ton		16.00	...	16.00	...	16.00
Flour, com'l, bgs ...100 lb.	1.60	1.95	1.60	2.35	1.65	2.35
bbls .....100 lb.	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs..100 lb.	...	2.00	2.00	2.80	2.20	2.80
bbls .....100 lb.	...	2.35	2.35	3.15	2.55	3.15
Extra fine, bgs .....100 lb.	...	2.35	2.85	3.00	2.85	3.00
Superfine, bgs .....100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls .....100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs .....100 lb.	3.00	3.75	3.00	3.75	3.00	3.75
bbls .....100 lb.	3.35	4.10	3.35	4.10	3.35	4.10
Roll, bgs .....100 lb.	...	2.35	2.35	3.10	2.35	3.10
bbls .....100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Sulfur Chloride, 700 lb drs, wks .....lb.	.03	.08	.03	.08	.03	.04
Sulfur Dioxide, 150 lb cyl lb.	.07	.09	.07	.09	.07	.09
Multiple units, wks ....lb.	.04½	.07	.04½	.07	.04½	.07
tks, wks .....lb.	.04	.06	.04	.06	.04	.05
Refrigeration, cyl, wks lb.	.16	.40	.16	.40	.16	.17
Multiple units, wks ...lb.	.07½	.10	.07½	.10	.07½	.10
Sulfuryl Chloride .....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd .....ton	no prices		98.00	140.00	65.50	85.00
Extract, 42°, bbls .....lb.	.06	.06¼	.06	.06¼	.05¼	.06¼
Superphosphate, 16% bulk, wks .....ton	...	8.50	8.50	9.00	8.00	9.00
Run of pile .....ton	...	8.00	8.00	8.50	7.50	8.50
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit .....ton	...	.68	.68	.70	..	.70
T						
Talc, Crude, 100 lb bgs, NY ton	14.00	16.00	14.00	15.00	13.00	15.00
Ref'd 100 lb bgs, NY ton	15.25	17.25	14.00	17.25	14.00	16.00
French, 220 lb bgs, NY ton	no prices		23.00	35.00	23.00	30.00
Ref'd, white bgs, NY ton	no prices		45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr ton	no prices		64.00	70.00	60.00	70.00
Ref'd', white bgs, NY ton	no prices		65.00	78.00	65.00	70.00
Tankage, Grd, NY ..:unit ¤	...	2.35	2.35	3.25	2.75	3.25
Ungrd .....unit ¤	...	2.35	2.35	3.25	2.75	5.00
Fert grade, f.o.b. Chgounit ¤	...	2.20	2.20	3.50	2.50	4.50
South American cif unit ¤	...	2.50	2.50	3.50	3.00	4.00
Tapioca Flour, high grade, bgs .....lb.	.03	.05	.02¾	.05	.01¾	.05½
Tar Acid Oil, 15%, drs..gal.	.22	.24	.22	.24	.21	.24
25% drs .....gal.	.25	.27	.25	.28	.25	.28
Tar, pine, delv, drs.....gal.	.26	.27	.26	.27	.25	.27
tks, delv, E. cities ....gal.	...	.21	...	.21	.20	.21
Tartar Emetic, tech, bbls lb.	.34¾	nom.	.34¾	.35	.27¾	.35
USP, bbls .....lb.	.40	nom.	...	.40	.33	.40
Terpineol, den grade, drs lb.	...	.17	...	.17	...	.17
Tetrachlorethane, 650 lb drs lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech lb.	.08	.09	.08	.09½	...	.09½
Tetralene 50 gal drs, wks lb.	...	.18	.12	.18	.12	.13
Thiocarbanilid, 170 lb bbls lb.	...	.24	.20	.25	.20	.25

Bags 15c lower; ¤ + 10.

STANDARD
"THE ORIGINAL SYNTHETIC SOLVENT MANUFACTURERS"

METHYL ETHYL KETONE

HAS SUPERIOR SOLVENT POWERS FOR

Nitrocellulose Cements
Paint and Varnish Removers
Photographic Films
Artificial Leather
Cleaning Fluids
Soaps

Ask for free booklet and sample

STANDARD ALCOHOL CO.
26 BROADWAY - - NEW YORK

DEALERS

PLATERS WILL ASK YOU FOR

TC
TENNESSEE CORPORATION

COPPER CARBONATE

Over 55% COPPER!

For all purposes such as plating and fungicidal uses. Experts appreciate higher copper content in this material. Easy to use. Reduces expenses. Dealers interested in our product can get free samples and descriptive literature.

Write for Full Information.

TENNESSEE CORPORATION
ATLANTA, GA. LOCKLAND, OHIO

CRUDE SULPHUR

99½% PURE

Free From

ARSENIC, SELENIUM AND TELLURIUM

•

TEXAS GULF SULPHUR COMPANY

(INCORPORATED)

75 East 45th St., New York City

Deposits and Plants: Newgulf and Long Point, Texas

Announcing

NEW PENACOL PRODUCTS

PHENOL SULFONIC ACID

NAPHTHALENE SODIUM TRISULFONATE

BENZENE MONOSULFONIC ACID

BENZENE META DISULFONIC ACID

CATECHOL SULFONIC ACID

P. C. P. CHEMICAL No. 5

(3,3,3'3' Tetramethyl-5,6,5'6'-Tetrahydroxy-1,1'-Spiro-Bis Indane)

P. C. P. CHEMICAL No. 6

(6-Hydroxy-3-Methyl-5 (1'-Methyl-Ethenyl Coumarane)

•

Samples and Prices upon request

PENNSYLVANIA COAL PRODUCTS COMPANY

PETROLIA • PENNSYLVANIA

Cable: PENACOL Phone: Bruin, Pa. 2641

SPECIALISTS IN DISTILLATION

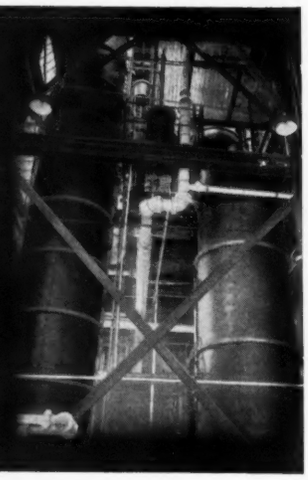
Complete Plants or Units

Engineers, Manufacturers and Constructors with Wide Experience in Production of Spirits, Beverages, Petroleum Products, and Organic Chemicals.

E. B. BADGER & SONS CO.

Boston New York

San Francisco



Tin
Zein

Prices

	Current Market	1940 Low	1940 High	1939 Low	1939 High
Tin,crystals, 500 lb bbls, wks lb.	...	.38	.36	.40½	.35½	.39
Metal, NY .....lb.	*...	.50½	.45½	.55	.45½	.60
Oxide, 300 lb bbls, wks lb.	...	.55	.51	.55	.50	.54
Tetrachloride, 100 lb drs, wks .....lb.	...	.24¾	.23	.26½	.23	.32
Titanium Dioxide, 300 lb bbls lb.	.13¼	.14	.13	.16	.13¼	.16
Barium Pigment, bbls ..lb.	.05¼	.06½	.05¼	.06½	.05⅝	.06½
Calcium Pigment, bbls lb.	.05¼	.06¼	.05	.06¼	.05⅜	.06½
Titanium tetrachloride, drs. f.o.b. Niagara Falls ....lb.	.32	.45	.32	45	.32	.45
Titanium trichloride 23% sol. bbls f.o.b. Niagara Falls lb.	.22	.26	.22	.26	.22	.26
20% solution, bbls ....lb.	.175	.215	.175	.215	.175	.215
Toluidine, mixed, 900 lb drs, wks .....lb.	...	.26	.26	.27	.26	.27
Toluol, 110 gal drs, wks gal.	...	.32	.27	.32	...	.27
8000 gal tks, frt all'd gal.	...	.27	.22	.27	...	.22
Toner Lithol, red, bbls..lb.	.55	.60	.55	.60	.55	.80
Para, red, bbls .....lb.	.70	.75	.70	.75	.70	.80
Toluidine, bgs .....lb.	...	1.05	1.05	1.35	...	1.35
Triacetin, 50 gal drs, wks, lb.	...	.26	...	.26	...	.26
Triamyl Borate, lcl,drs,wks lb.	...	.27	...	.27	...	.27
Triamylamine, c-l, drs, wks lb.	...	.77	...	.77	.77	1.25
lcl, wks, drs .....lb.	.78	.80	.78	.80	...	...
tks, wks .....lb.	...	.75	...	.75	...	...
Tributylamine, lcl, drs, wks lb.	.68	.70	.68	.70	...	.70
c-l, drs, wks .....lb	...	.67	...	.67	...	...
tks, wks .....lb.	...	.65	...	.65	...	...
Tributyl citrate,drs,frt all'd lb.	.24	.26	.24	.35	.35	.45
Tributyl Phosphate, frt all'd lb.	...	.42	...	.42	...	.42
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	.08	.09	.08	.09	.08	.09½
Tricresyl phosphate,tech,drs, lb.	.22	.36½	.22	.36½	.22	.37½
Triethanolamine, 50 gal drs wks .....lb.	...	.19	.19	.22	.21	.22
tks, wks .....lb.	...	.18	.18	.20	...	.20
Triethylamine, lcl, drs, f.o.b. wks .....lb.	...	1.05	...	1.05	...	...
Triethylene glycol, drs, wks lb.	...	.26	...	.26	...	.26
Trihydroxyethylamine Oleate, bbls .....lb.	...	.30	...	.30	...	.30
Stearate bbls .....lb.	...	.30	...	.30	...	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest .....lb.	...	.50	...	.50	...	.50
Trimethylamine, c-l, drs, frt all'd E. Mississippi ...lb.	...	1.00	...	1.00	...	1.00
Triphenylguanidine, ...lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs..lb.	...	.38	...	.38	...	.38
Tripoli, airfloated, bgs, wks ton	...	26.00	26.00	30.00	26.00	30.00
Turpentine (Spirits), c-l, NY dock, bbls .....gal.	...	.36½*	.32½	.40	.29	.35
Savannah, bbls .....gal.	...	.24½*	.26½	.34	.23½	.29
Jacksonville, bbls .....gal.	no prices		.26	.34¾	.23½	.26¾
Wood Steam dist, drs, c-l, NY .....gal.	...	.29*	.27	.34½	.242	.34
Wood, dest dist, l-c-l, drs, delv E. cities .....gal.	...	.32*	.23	.32	.22	.25
U						
Urea, pure 112 lb cases lb.	...	.12	.12	.15½	.14½	.15½
Fert grade, bgs, c. i. f. S.A. points .....ton	no prices		...	110.00	95.00	110.00
Dom f.o.b., wks .....ton	...	85.00	85.00	101.00	95.00	101.00
Urea Ammonia, liq., nitrogen basis .....ton	...	121.50	...	121.50	...	...
V						
Valonia beard, 42%, tannin bgs .....ton	...	56.00	47.00	56.00	45.00	57.00
Cups, 32% tannin bgs..ton	42.00	44.00	33.00	39.00	27.00	39.00
Extract, powd, 63% ...lb.	.0565 nom.		.0565	.06	.05	.06
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots ....lb.	...	2.60	...	2.60	2.20	2.60
Ex-guaiacol .....lb.	...	2.50	...	2.50	2.10	2.50
Ex-lignin .....lb.	...	2.50	...	2.50	2.10	2.50
Vermilion, English, kgs...lb.	no prices		...	2.76	1.50	2.97
W						
Wattle Bark, bgs .....ton	37.50	39.50	34.00	38.75	34.50	40.00
Extract, 60°, tks, bbls..lb.	...	.03⅞	.03⅞	.04¼	.04	.05½
Wax, Bayberry, bgs .....lb.	.22	.23	.25	.30	.16⅞	.39
Bees, bleached, white 500 lb slabs, cases .....lb.	...	.35	.35	.38	.33	.40½
Yellow, African, bgs..lb.	.24½	.25	.23	.28	.18½	.30
Brazilian, bgs .....lb.	.25½	.26	.24	.29	.21	.33
Refined, 500 lb slabs, cases lb.	.29	.31	.29	.36	.25½	.36
Candelilla, bgs .....lb.	.18½	.19	.18	.19	.15¼	.19
Carnauba, No. 1, yellow, bgs .....lb.	.70	.71	.58	.85	.36¾	.78
No. 2, yellow, bgs...lb.	.69	.70	.57	.84	.35¾	.45
No. 2, N. C., bgs ...lb.	.59	.60	.46	.73	.34	.41
No. 3, Chalky, bgs ...lb.	.55	.55½	.43	.66	.27½	.46
No. 3, N. C., bgs ...lb.	.56	.56½	.47	.68	.28¾	.49
Ceresin, dom, bgs .....lb.	.11½	.12	.11½	.15	.08½	.15
Japan, 224 lb cases ....lb.	.15½	.16	.15½	.16½	.09¾	.18
Montan, crude, bgs ....lb.	no prices		no prices		.11	.11¾
Paraffin, see Paraffin Wax,						
Spermaceti, blocks, cases lb.	.22	.23	.22	.25	.18	.25
Cakes, cases .....lb.	.23	.24	.23	.25	.19	.26
Whiting, chalk, com 200 lb bgs, c-l, wks .....ton	16.00	20.00	12.00	20.00	12.00	14.00
Gilders, bgs, c-l, wks..ton	...	18.00	15.00	18.50	...	15.00
Wood Flour, c-l, bgs ....ton	24.00	25.00	20.00	30.00	20.00	30.00
Xylol, frt all'd, East 10° tks, wks .....gal.	...	.29	...	.30	.29	.30
Com'l tks, wks, frt all'd, gal	...	.26	...	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.35	.36
Zein, bgs, 1000 lb lots, wks .....lb.	...	.20	...	.20	...	...

* Aug. 31. ‡ May 31.

Current

Zinc Acetate
Oil, Whale

		Current Market	1940 Low	1940 High	1939 Low	1939 High
Zinc Acetate, tech, bbls, lcl, delv	lb.	.15	.16	.15	.16	.15	.21
Arsenite, bgs, frt all'd	lb.	...	.12	.12	.12½	.12	.13
Carbonate tech, bbls, NY	lb.	.14	.16	.14	.16	.14	.15
Chloride fused, 600 lb drs, wks	lb.	...	.04¼	.04¼	.046	.04¼	.046
Gran, 500 lb drs, wks	lb.	...	.05	.05	.05¾	.05	.05¾
Soln 50%, tks, wks 100	lb.	...	2.25	...	2.25	...	2.25
Cyanide, 100 lb drs	lb.	...	.33	...	.33	...	.33
Dust, 500 lb bbls, c-l, delv	lb.	...	.08½	.07½	.08½	.06½	.08½
Metal, high grade slabs, c-l, NY	100 lb.	...	6.64	5.90	6.64	4.84	6.40
E. St. Louis	100 lb.	...	6.25	4.60	6.25	4.60	6.00
Oxide, Amer, bgs, wks	lb.	.06¼	.07½	.06¼	.07½	.06¼	.07½
French 300 lb bbls, wks	lb.	.06¼	.07½	.06¼	.07¾	.06½	.07¾
Palmitate, bbls	lb.	.24½	.27½	.23	.27½	.23	.25
Resinate, fused, pale bbls	lb.	...	.10	.	.10	.	.10
Stearate, 50 lb bbls	lb.	...	.22	.21½	.24½	.20	.24½
Sulfate, crys, 400 lb. bbls wks	lb.	...	.029	.0275	.029	...	.029
Flake, bbls	lb.	...	.0325	...	.0325	...	.0325
Sulfide, 500 lb bbls, delv	lb.	...	.07¾	.07¾	.08	.07¾	.08⅛
bgs, delv	lb.	...	.07½	.07½	.07¾	.07½	.08⅝
Sulfocarbolate, 100 lb kgs	lb.	.24	.26	.24	.26	.24	.26
Zirconium Oxide, crude, 70-75% grd, bbls, wks	ton	75.00	100.00	75.00	100.00	75.00	100.00

Oils and Fats

Babassu, tks, futures	lb.	nom.	.05¾	.05¾	.06⅝	.05⅞	.07⅝
Castor, No. 3, 400 lb drs	lb.	nom.	.10¾	.10¾	.12¾	.08¼	.12¾
Blown, 400 lb drs	lb.	nom.	.12¾	.12¾	.14¾	.10¼	.14¾
China Wood, drs, spot NY	lb.	...	.26	.22½	.28	.15	.28
Tks, spot NY	lb.	...	.25	.21½	.27	.14½	.27
Coconut, edible, drs NY	lb.	...	.07½	.07½	.09⅜	.08⅛	.10⅛
Manila, tks, NY	lb.	...	.02⅞	.02⅞	.03⅜	.02⅞	.04⅝
Tks, Pacific Coast	lb.	.02⅝	.02¾	.02¾	.03½	.02⅝	.04⅜
Cod, Newfoundland, 50 gal bbls	gal.	...	.70	.65	.72	.29	.72
Copra, bgs, NY	lb.	.0185	.0190	.0165	.0190	.0160	.2625
Corn, crude, tks, mills	lb.	...	.05⅛	.05⅛	.06½	.05⅛	.07⅛
Refd, 375 lb bbls, NY	lb.	...	.07⅞	.07⅞	.09	.07½	.09¾
Degras, American, 50 gal bbls NY	lb.	.08	.09½	.08½	.10	.07	.10
English, bbls	lb.	.08½	.09½	.08½	.10	.07	.10
Greases, Yellow	lb.	nom.	.03	.03	.05¼	.03⅞	.06¾
White, choice, bbls, NY	lb.	nom.	.03⅜	.03⅜	.05⅝	.04½	.07½
Lard, Oil, edible, prime	lb.	...	.08	.08	.10	.09	.11¼
Extra, bbls	lb.	...	.06¾	.06¾	.09⅜	.08	.10⅜
Extra, No. 1, bbls	lb.	...	.06⅝	.06⅞	.08⅞	.07¾	.10⅛
Linseed, Raw less than 5 bbl lots	lb.	...	.09	.09	.116	.092	.119
bbls, c-l, spot	lb.	...	.084	.084	1.10	.084	.111
Tks	lb.	...	.078	.078	.104	.078	.104
Menhaden, tks, Baltimore	gal.	.35	nom.	.32	.35	.21	.35
Refined, alkali, drs	lb.	...	.067	.067	.079	.062	.082
Tks	lb.	...	.061	.061	.071	.056	.076
Kettle boiled, drs	lb.	...	.079	.079	.093	.074	.094
Light pressed, drs	lb.	...	.061	.061	.075	.056	.076
Tks	lb.	...	.055	.055	.069	.067	.069
Neatsfoot, CT, 20°, bbls, NY	lb.	...	.15¼	.15¼	.19¼	.14¾	.19¾
Extra, bbls, NY	lb.	...	.06⅞	.06⅞	.09	.08	.10⅛
Pure, bbls, NY	lb.	...	.10¼	.10¼	.14¼	.10¾	.16¾
Oiticica, bbls	lb.	.17½	.18½	.17	.21	.09¼	.21
Oleo, No. 1, bbls, NY	lb.	...	.07⅜	.07⅜	.07¾	.07¼	.12
No. 2, bbls, NY	lb.	...	.07⅜	.07	.07½	.06¾	.11¾
Olive, denat, bbls, NY	gal.	nom.	1.65	.94	1.65	.82	1.40
Edible, bbls, NY	gal.	...	2.40	1.85	2.40	1.75	2.25
Foots, bbls, NY	lb.	...	.08¾	.08	.09	.06¾	.10
Palm, Kernel, bulk	lb.	no prices		no prices		.034	.036
Niger, cks	lb.	nom.	.03¾	.03¾	.05½	.03⅝	.05½
Sumatra, tks	lb.	...	.02¼	.02¼	.03	.0265	.02¾
Peanut, crude, bbls, NY	lb.	...	.09	.06¾	.09	.06	.08
Tks, f.o.b. mill	lb.	nom.	.05⅛	.05⅛	.07⅛	.05¼	.07¼
Refined, bbls, NY	lb.	...	.08½	.08¼	.09¾	.08¾	.10¾
Perilla, drs, NY	lb.	...	.18	.19	.21	.09½	.16½
Tks, Coast	lb.	...	.17	.18½	.20	.089	.15¾
Pine, see Pine Oil, Chem. Sec.							
Rapeseed, blown, bbls, NY	lb.	nom.	.17½	.17	.17½	.14	.17½
Denatured, drs, NY	gal.	1.10	1.15	1.00	1.05	.80	1.05
Red, Distilled, bbls	lb.	.06¼	.07¼	.06¼	.09½	.06¾	.09½
Tks	lb.	...	.05¾	.05¾	.08	.064	.08½
Sardine, Pac Coast, tks	gal.	.38	nom.	.37	.39	.24	.38
Refined alkali, drs	lb.	...	.067	.067	.081	.062	.082
Tks	lb.	...	.061	.061	.075	.056	.076
Light pressed, drs	lb.	...	.061	.061	.075	.056	.076
Tks	lb.	...	.055	.055	.069	.05	.07
Sesame, white, dom	lb.	.16	nom.	.11½	.11¾	.09	.12
Soy Bean, crude							
Dom, tks, f.o.b. mills	lb.	...	.04¾	.04¾	.06¼	.04½	.06½
Crude, drs, NY	lb.	...	.05¾	.05¾	.07¾	.05⅛	.07⅝
Ref'd, drs, NY	lb.	...	.07¼	.07¼	.08½	.06⅜	.09
Tks	lb.	...	.06¼	.06¼	.07⅝	.05¾	.07¾
Sperm, 38° CT, bleached bbls, NY	lb.	...	.11	.105	.11	.09	.103
45° CT, blchd, bbls, NY	lb.	...	.103	.098	.103	.083	.096
Stearic Acid, double pressed, dist bgs	lb.	...	.10	.09¾	.13	.10	.13½
Double pressed saponified bgs	lb.	...	.10¼	.10	.13¾	.10¼	.13¾
Triple pressed dist bgs	lb.	...	.12¾	.12½	.16½	.12¾	.16½
Stearine, Oleo, bbls	lb.	nom.	.05¼	.05¼	.06½	.05½	.12
Tallow City, extra loose	lb.	nom.	.03⅜	.03⅜	.05⅜	.04⅜	.07
Edible, tierces	lb.	nom.	.04⅜	.04⅜	.05¾	.04½	.07¾
Acidless, tks, NY	lb.	...	.06¼	.06¼	.08	.07	.09¼
Turkey Red, single, drs	lb.	...	.08	.082	.09	.06	.08⅝
Double, bbls	lb.	...	.10½	.11	.12¾	.08¾	.11¼
Whale:							
Winter bleach, bbls, NY	lb.	...	095	...	.095	.075	.095
Refined, nat, bbls, NY	lb.	...	.091	...	.091	.071	.091

STRONTIUM OXALATE

For~

The Pyrotechnic Industry

STRONTIUM

CARBONATE SULPHATE

Foote Mineral Co.

1603 Summer St., Philadelphia, Pa.

BEACON

PHOSOILS

(Phosphorated Oils)

Stable in Neutral, Acid or Alkali Media.
Quicker wetting—more efficient penetrating —greater emulsification power

for:

Textiles • Leather • Cosmetics • Paper

Send for Literature

THE BEACON COMPANY

89 Bickford Street — Boston, Mass.

PETROLEUM SULPHONATES

(Naphthenic or Mahogany Soaps)

FILTRABLEND

Line of ready-made bases for soluble oils, textile oils, metal cutting oils, wax emulsification, etc.

FILTRONA

Highly purified dispersing agent for all technical oil emulsions.

FILTRAWAX

Pure White — Amorphous Structure

Ask for Complete Information

Distributors Wanted in Several Territories

PETROLEUM SPECIALTIES, INC.

570 LEXINGTON AVENUE PLaza 8-2644 NEW YORK

PROFESSIONAL DIRECTORY

Ehrlich, J., Ph.D.
CONSULTING CHEMIST
153 South Doheny Drive
Beverly Hills, California
ORGANIC SYNTHESES
Fellow of the American Institute of Chemists

T. E. R. SINGER
Technical Literature Searches,
Bibliographies and Abstracting,
501 Fifth Avenue, New York
Murray Hill 2-5346-7

E. L. LUACES
U. S. and Foreign Patents
Chemistry • Engineering
1107 Broadway, New York City
Tel. CHelsea 3-3600

Industry's Bookshelf

Textbook of Organic Chemistry, by E. Wertheim, Blakiston, Phila., 830 pp., $5.00. A modern, workmanlike introductory text with valuable table of chemical and physical properties and plant flow sheets of many commercial organic processes.

The Social Function of Science, by J. D. Bernal, Macmillan, N. Y.; 482 pp., $3.50. An important pioneer study with a bias towards socialism which naturally colors the conclusions but unfortunately tints the selection and presentation of the facts so that the work just misses a real greatness.

Holyoke, by Constance McLaughlin Greene, Yale Univ. Press, New Haven; 425 pp., $4.00. From fur trading post, through cotton mill, to paper plant the business story of this Massachusetts city is carefully told—a real case history of a typical New England community of value and interest.

Fortunes in Formulas, by Gardner D. Hiscox and T. O'Connor Sloane, Books, Inc., N. Y. and Boston; 863 pp., $1.98. A lot for a little—a wonderfully complete and well indexed collection with a useful introduction on compounding and a highly curious list of sources of supply.

Economic Strength of Japan, by Isoshi Asahi, The Hokuseido Press, Tokyo; 324 pp., $3.00. Elegant propaganda in the profane and exact meanings of that adjective; but as revealing as Mein Kampf. One may question the facts, but the feeling that labor saving machinery is to be used to release man power is beyond doubt.

Chemical Pioneers, by Williams Haynes, D. Van Nostrand, N. Y.; 288 pp., $2.50. Brings vividly to life fifteen men from Winthrop and Rosengarten to Queeny and Dow who built our industry; easy to read and worth reading.

World Economy in Transition, by Eugene Staley, Council on Foreign Relations, N. Y., 340 pp., $3.00. A 1939 study of the world's trade and finances.

Refrigerating Data Book, Vol. I—Principles and Machinery—Amer. Soc. of Refrigerating Engineers, N. Y. C.; 527 pp. A book that honestly deserves to be called "a refrigerating Bible"—complete, accurately, beautifully arranged for convenience, well indexed—a notable volume.

Security by Sir Arthur Salter, Reynal & Hitchcock, N. Y.; 391 pp., $3.50. Do not miss this latest book by a man who knows how to think and write upon the complex tangle of political economics with a sanity and clarity that is sorely needed.

Growing Plants Without Soil, by D. R. Matlin, Chemical Publishing Co., N. Y.; 135 pp., $2.00. The facts and formulas presented with all the zeal of a real missionary.

Conquests of Science, edit. by Ray Compton & Chas. E. Netteps; Harcourt-Brace, N. Y.; 378 pp., $1.75. Smartly chosen abstracts from popular writers—good reading, but gives a very sketchy picture in which personalities overshadow the discoveries.

Dictionary of Scientific Terms, I. F. & W. D. Henderson, Van Nostrand, N. Y.; 383 pp., $7.00. Biological in scope this dictionary is nevertheless of such authority and value that many chemical people will require this new third revision—a model indeed both for pronunciation and definition in a notably handsome format.

Farmward March, by Wm. J. Hale, Coward-McCann, N. Y.; 222 pp., $2.00. A slashing attack on the stupidity of politicians and internationalists who fail to recognize the chemical basis of our environment—all that and more too, for this book is Dr. Hale at his militant best. Should be required reading of every public officeholder.

Piping Handbook, by J. H. Walker & Sabin Crocker, McGraw-Hill,, N. Y.; 897 pp., $6.00. Since a chemical plant has been described as "a maze of pipes connecting reaction vessels" this third edition of this familiar handbook will be welcome especially so as the data on piping materials, valves, and heat insulation are among those very completely revised.

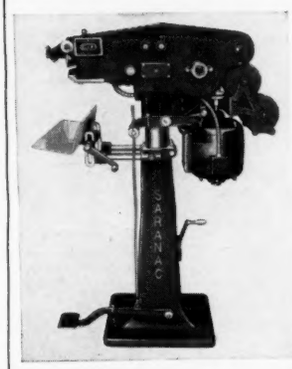
Uses and Applications of Chemicals and Related Materials, by Thos. C. Gregory, Reinhold Pub. Co., N. Y.; 665 pp., $10.00. A highly useful reference book splendidly done: covers 5167 chemicals and is just about indispensable. The clumsy and uncertain method of alphabetization is the only fault to be found in what is a monumental work.

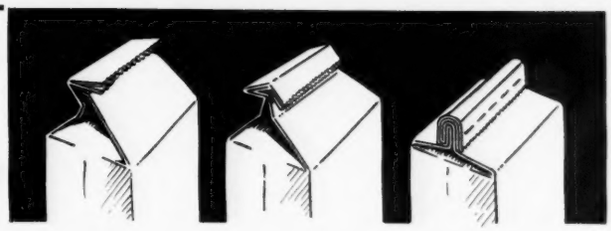
Better Business Letters, by Paul V. Sheehan, Benj. H. Sanborn & Co., Boston; 368 pp. A good practical handbook with a wealth of better-than-average sample letters that range from job applications to bill collecting.

Railroads and Rivers, by William H. Clark, Page, Boston; 329 pp., $3.50. From canoe to streamliner, the author tells the dramatic story of our inland transportation system in a setting of our industrial development.

Introduction to Crystal Chemistry by R. C. Evans; Cambridge Univ. Press., N. Y., 388 pp., $4.50. Critical survey of the knowledge of physical and chemical properties that has resulted from X-ray study of crystal structure.

ARE YOU MISSING A CHANCE TO CUT COSTS?





Why not investigate the savings made possible by packaging dry and powdered chemical products in bags—protected by attractive Saranac Sift-Proof Closures? Saranac Bag Sealers "reverse double-fold" bag tops, making and driving their own staples from standard wire coils for as low as 2½¢ per thousand. Bottoms of empty tubes or filled bags up to 5-ply thickness and 100 pounds weight are sealed rapidly and easily. This low-cost closure is the bag's strongest part—attractive, sift-proof, *saleable!*

To learn how your own packaging costs may be cut, write Saranac your individual problems. They will receive prompt attention by experienced engineers. No obligation. Ask for bulletin *C-154*—Today.

SARANAC MACHINE COMPANY BENTON HARBOR MICHIGAN

BIG PRODUCTION

AT LOW COST FROM THIS HEAVY-DUTY CRUSHER . . . UNIFORM PRODUCT . . . MINIMUM OF FINES

If you need quantity production from a machine to crush clay, plastics, bauxite or any other of a wide variety of materials, this Sprout-Waldron Precision Giant is the answer. It's just one of the big family of Sprout-Waldron crushers, cutters, grinders, granulators and defiberizers. There's one to fit your problem. *What are your requirements?*

SPROUT, WALDRON & CO., INC.
106 SHERMAN ST MUNCY, PA.
Manufacturing Engineers . . . . Since 1866

CRUSHING, GRINDING, GRADING, PACKING, ELEVATING CONVEYING, MIXING AND POWER TRANSMISSION MACHINERY

CHASE PROTECTION

Chase PROTEX Burlap or Cotton Waterproof Paper Lined Bags offer greater protection for your fine chemicals.
The triple protection of fabric, waterproof adhesive and crinkled paper lining makes PROTEX Bags dirt proof, moisture proof, sift proof and proof against contamination or loss of essential elements.

CHASE BAG CO.
"COAST TO COAST BAG SERVICE"
GENERAL SALES OFFICES
New York Chicago New Orleans

DRUMS

a complete line of light gauge containers

Full Removable Head
CONTAINERS

Where added strength and security are needed use our "Bolted Ring Seal" drum shown above. Supplied in sizes from 10 to 70 gallons. Suitable for solids and semi-liquids. Consult us freely on your packaging problems.

EASTERN STEEL BARREL CORPORATION
BOUND BROOK . . . . . NEW JERSEY

ESTABLISHED 1880

Wm. S. Gray & Co.

342 MADISON AVENUE, NEW YORK

Telephone Murray Hill 2-3100 - - Cable Graylime

TURPENTINE - ROSIN
CHEMICALS - - - SOLVENTS

Massachusetts

ALAN A. CLAFLIN
Manufacturer's Agent
DYESTUFFS and CHEMICALS
Specializing in
BENTONITE
AND
TALC
88 Broad Street Boston, Mass.
TELEPHONE Liberty 5944 - 5945

DOE & INGALLS, INC.
Chemicals and Solvents
Full List of Our Products, see Chemical Guide-Book
Everett Station, Boston EVErett 4610

E. & F. KING & Co., Inc.
Est. 1834
399-409 Atlantic Avenue
Boston, Mass.
Industrial Chemicals
(CO_2)
Solid Carbon Dioxide

Illinois

METHYL METHACRYLATE
Monomeric (Liquid)
$CH_2 = C(CH_3) - COOCH_3$
CHEMICALLY PURE
Quotations and samples upon request
CONSOLIDATED CHEMICAL MFG. CO.
5537 West Congress Street Chicago, Ill.

AMMONIUM THIOCYANATE
95% and 98%
WRITE OR WIRE FOR INFORMATION
ARTHUR S. LaPINE & COMPANY
LABORATORY SUPPLIES AND REAGENTS
INDUSTRIAL CHEMICALS
114 WEST HUBBARD STREET
•CHICAGO•

Rhode Island

GEORGE MANN & CO., INC.
251 Fox Pt. Blvd., Providence, R. I.
(Phone—Gaspee 8466)
Branch Office
NORTH STATION INDUSTRIAL BLDG.
150 Causeway St., Boston, Mass.
(Phone—Capital 2217 and 2218)
Industrial Chemicals
Glycerine
Stearic Acid

GLYCERINE
Heavy Chemicals
Textile Specialties
J. U. STARKWEATHER CO.
INCORPORATED
729 Hospital Trust Bldg.
Providence, R. I.

Pennsylvania

FOR ALL INDUSTRIAL USES
AFCO BRAND
CHEMICALS
SINCE 1855
Spot Stocks
Technical Service
ALEX. C. FERGUSSON CO.
Drexel Building PHILADELPHIA, PA.
Lombard 2410-11-12

New York

CHEMICALS
GUMS • WAXES • OILS
for all industrial uses
Spot or Future
EDWARD P. PAUL & CO., INC.
Established 1898
1133 Broadway New York City

HORMONES
PHARMACEUTICALS
VITAMINS
RARE CHEMICALS • AMINO ACIDS • SUGARS
HERMAN MEYER DRUG COMPANY, INC.
17 STATE STREET NEW YORK
WHitehall 4-5105 Cable: Sulfanyl

Patents

PATENT YOUR IDEAS
send a Sketch or Model of your invention for
CONFIDENTIAL ADVICE
FREE CONSULTATION LITERATURE
IDEAS
Z. H. Polachek
1234 BROADWAY NEW YORK
PATENT ATTORNEY
ENGINEER
U. S. Pat. Off. records searched for ANY Invention or Trade Mark

Formulas

FOR NEW and ORIGINAL IDEAS
IRA I. SLOMON
ADHESIVE SPECIALIST
L. I. CITY, N. Y.
RUBBER and LACQUER RESEARCH

fight CANCER *with* KNOWLEDGE

Helping thousands of frightened people to regain their peace of mind ...this is one of the most constructive services of the New York City Cancer Committee of the American Society for the Control of Cancer.

Your peace of mind will be helped by your support of the Committee's work through the purchase of its labels. Mail your dollar today. You will receive a book of package labels and the Quarterly Review, and you will share in a vital service.

New York City Cancer Committee
of the American Society for the Control of Cancer
130 East 66th St., New York, N.Y.

For my $1.00 please send a supply of package labels and the Quarterly Review.

*name*_____
*street*_____
*city*_____ *state*_____

If you live outside the Metropolitan area, write to—American Society for the Control of Cancer, 350 Madison Avenue, New York, N.Y.

RATES

CLASSIFIED—DISPLAY

One time—$5.00 an inch
Six times—$4.50 an inch
Twelve times—$4.00 an inch

HELP WANTED • SITUATIONS WANTED

$1.00 for 20 words or less; extra words, 5c each

CASH WITH ORDER

Business Opportunities

WANT MORE BUSINESS? Get it with our monthly house organ. 250 copies, $7.50; 500, $10. Two colors. Keeps customers, prospects, thinking about you. Full front page for your advertising. Get samples. Crier, Inc., 1840 East 87th St., Cleveland, Ohio.

INVESTOR, with chemical background and good business experience, wishes to purchase active partnership in sound business having opportunity for expansion; or will purchase business from retiring owner. Will consider starting new venture or promoting interesting product. Box 1406, CHEMICAL INDUSTRIES.

INDUSTRIAL CHEMISTRY AND TECHNOLOGY

Courses by mail; class in Phila. Paint resin and chemical analysis. INDUSTRIAL CONSULTANTS, P. O. Box 7515, Phila., Pa.

DESIRE TO BUY INTEREST IN SMALL chemical plant specializing manufacture of organic and specialty products, especially dyestuffs. BOX 1404, CHEMICAL INDUSTRIES.

Help Wanted

WANTED—CHEMIST

INDUSTRIAL FINISHES MANUFACTURER LOCATED in Metropolitan New York desires services of chemist with research, formulation, production and control experience in synthetic enamels. Our own employees have been notified of this ad. Please fully state experience. BOX 1405, CHEMICAL INDUSTRIES.

SALESMANAGER WITH EXECUTIVE ability, experienced in sale of laboratory supplies and chemicals. Good job for the right man. Give full particulars and photograph in first letter. Chas. H. Stanfield, care The Western Machinery Company, Wichita, Kansas.

Machinery For Sale

CONSOLIDATED OFFERS:

2—No. 10 Sweetland Filters, 2" and 2½" c.c.; other smaller sizes.
1—Badger 30" dia. all copper Distillation Unit. complete.
2—Devine 5' x 33' Rotary Vacuum Dryers; 6—4' x 20'.
1—9' Copper Vacuum Coil Pan.
1—Duriron 750-gallon Jacketed Kettle.
2—8' x 125' Rotary Kilns; 5—6' x 60'.
1—Shriver 42" x 42" Castiron Filter Press, plate and frame, 30 chambers.
1—W. & P. Vacuum Mixer, 100 gals.
1—Zaremba triple effect Evaporator, 2100 sq. ft. per effect.

Only a partial list.

Did you receive your copy of the Latest Edition of the Consolidated News?

We buy your idle Machinery.

CONSOLIDATED PRODUCTS CO., INC.

13-18 PARK ROW **NEW YORK, N. Y.**

Shops and Warehouse: 335 Doremus Ave., Newark, N. J.

PREPARE FOR PRODUCTION

With Guaranteed Good as New

REBUILT EQUIPMENT

Ready for Immediate Delivery

Devine Vacuum Chamber Dryers
Rotary Atmospheric Dryers
Louisville Direct Heat Dryers
Buffalo, Zaremba, Devine Evaporators
Kettles in Copper, Cast Iron, Steel Glass Lined and Nickeled . . all sizes
FILTER PRESSES, Shriver 30" x 30", 36" x 36", Johnson, Kelly and others
Hardinge Mills, Mikro Pulverizers
Raymond 2 and 3 roll High Side Mills
Gruendler Crushers and Hammer Mills
Day, Robinson, Abbe, W. & P. MIXERS in all wanted types and capacities

F M C

FIRST MACHINERY CORP.

819 E. 9th STREET NEW YORK, N. Y.

FOR SALE

4—12x30" 3-Roller Paint Mills
1—8-Gallon Pony Mixer
2—15 Gallon Pony Mixers
1—20" Flat Stone Mill
15—150 Gallon Vertical Mixing Churns
18" Twin Iron Color Mills

BOX 1391, CHEMICAL INDUSTRIES

Situations Wanted

CHEMIST, M.S. '38, seeks sales, sales promotion or sales development position requiring thorough chemical foundation, now employed inside sales position, closely related to industry. Single; 25, now located New York area. Box 1407, CHEMICAL INDUSTRIES.

Busy Executives

read

CHEMICAL INDUSTRIES

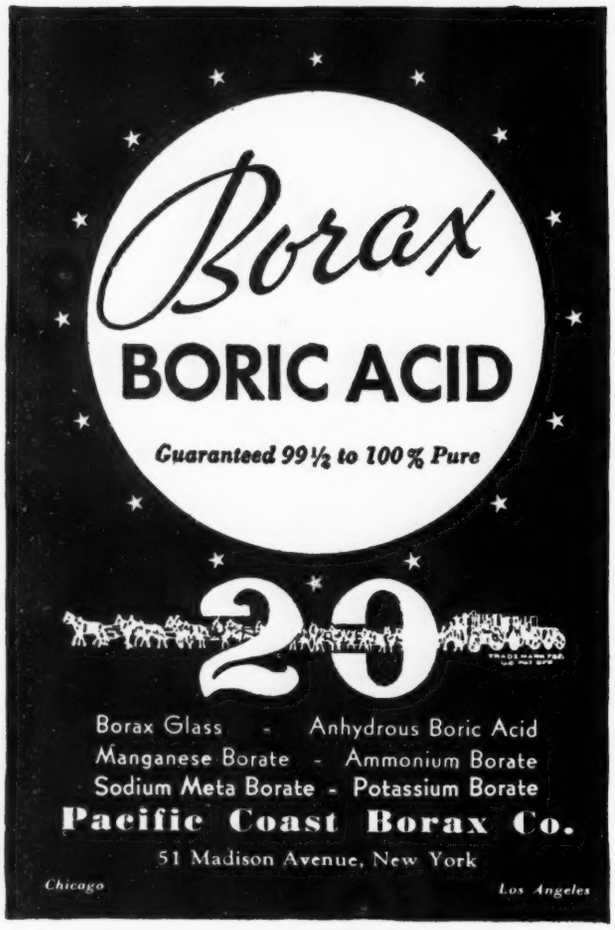
Always at their finger tips CHEMICAL INDUSTRIES is a dependable source of information. New chemicals, new uses, chemical reports and trends are but a few of the topics authoritatively discussed.

Every executive in the chemical industry will profit by a personal subscription. Price $3.00 a year. Fill in and mail coupon below today.

CHEMICAL INDUSTRIES
522 Fifth Ave. New York, N.Y.

Signed .....
Position .....
Company .....
Business .....
Address .....
City ..... **State** .....

☐ ***Check enclosed*** ☐ ***Send bill***



SULPHUR
99.5% PURE

Ample stocks of 99.5% pure crude sulphur—free from arsenic, selenium and tellurium—plus up-to-date production and shipping facilities at our mines at Port Sulphur, Louisiana, and Freeport, Texas, assure our customers the utmost in steady, dependable service.

FREEPORT SULPHUR COMPANY
122 East 42nd Street ● New York

Ready to Serve—

Aqua Ammonia
Anhydrous Ammonia
Yellow Prussiate of Soda
Calcium Ferrocyanide
Calcium Chloride
Tri-Sodium Phosphate

HENRY BOWER CHEMICAL
MANUFACTURING COMPANY
29th & GRAY'S FERRY ROAD PHILADELPHIA, PA.

Index to Advertisers

American British Chemical Supplies, Inc. 309
American Cyanamid & Chemical Corp. .... Pages 230 and 231
American Potash & Chemical Corp. 317

Badger & Co., E. B. 320
Baker Chemical Co., J. T. 295
Barrett Co., The 243
Beacon Co., The 321
Bower Chemical Mfg. Co., Henry 326
Burke, Edward S. 312

Carbide & Carbon Chemicals Corp. 235
Chase Bag Co. 323
Chew, Inc., John A. 266
Church & Dwight Co., Inc. 311
Claflin, Alan A. 324
Columbia Alkali Corporation 234
Consolidated Chemical Mfg. Co. 324
Consolidated Products Co., Inc. 325

Diamond Alkali Co. 272
Doe & Ingalls, Inc. 324
Dow Chemical Co. 245
Dunkel & Co., Inc., Paul A. 318
du Pont de Nemours & Co., Inc., E. I. Grasselli Chemicals Department 233
du Pont de Nemours & Co., Inc., R. & H. Chemicals Department 239

Eastern Steel Barrel Corp. 323
Ehrlich, J., Dr. 322
Electro Bleaching Gas Co. 232

Fergusson Co., Alex C. 324
First Machinery Corp. 325
Foote Mineral Co. 321
Freeport Sulphur Co. 326

General Ceramics Co. 265
General Chemical Co. ..... Cover 3
General Dyestuff Corp. 327
Glyco Products Co. 315
Gray & Co., William S. 323
Grasselli Chemicals Department, du Pont de Nemours & Co., Inc., E. I. 233
Greeff & Co., R. W. 318

Harshaw Chemical Co., The 244
Heyden Chemical Corp. 313
Hooker Electrochemical Co. 309

Index to Advertisers

Industrial Chemical Sales, Division West Virginia Pulp & Paper Co. 268
Innis, Speiden & Co. 289

Jungmann & Co. 326

Kessler Chemical Co., Inc. 305
King & Co., Inc., E. & F. 324

La Pine & Company, Arthur S. 324
Luaces, E. L. 322

Mallinckrodt Chemical Works 296
Mann & Co., Inc., Geo. 324
Marine Magnesium Products Corp. 314
Mathieson Alkali Works, Inc. 227
Meyer Drug Co., Herman 324
Monsanto Chemical Co. ..... Cover 1
Mutual Chemical Co. of America, Inc. 229

National Aniline & Chemical Co., Inc. 236
National Can Company 287
National Carbon Co., Inc., Carbon Sales Division 240
Natural Products Refining Co. 246
Niacet Chemicals Corp. 307
Niagara Alkali Company 232

Oldbury Electro-Chemical Co. 316

Pacific Coast Borax Co. 326
Paul & Co., Inc., Edward P. 324
Pennsylvania Coal Products Co. 320
Pennsylvania Salt Mfg. Co. 327
Petroleum Specialties, Inc. 321
Pfizer & Co., Inc., Chas. 241
Phelps Dodge Refining Co. 312
Philadelphia Quartz Co. 238
Polachek, Z. H. 324
Prior Chemical Corporation 290

R. & H. Chemicals Department, du Pont de Nemours & Co., Inc., E. I. 239
Rosenthal Co., Inc., H. H. 316

Saranac Machine Co. 323
Sharples Solvents Corp. 293
Singer, T. E. R. 322
Slomon, Ira I. 324
Solvay Sales Corporation ..... Cover 2
Sprout, Waldron & Co. 323
Standard Alcohol Co. 319
Standard Silicate, Division of Diamond Alkali Co. 242
Starkweather Co., J. U. 324
Stauffer Chemical Co. 237
Stroock & Wittenberg Corp. 311
Stroock & Wittenberg Corp. 317

Tennessee Corp. 319
Texas Gulf Sulphur Co. 320
Turner & Co., Joseph 307

U. S. Industrial Chemicals, Inc. Insert facing pages 304 and 305
U. S. Potash Co. 314

Victor Chemical Works 271

Warner Chemical Co., Division Westvaco Chlorine Products Corp. 225
Wishnick-Tumpeer, Inc. ..... Cover 4

▶CARBON◀ TETRACHLORIDE

Whether you use it as a cleaning agent, solvent, intermediate, or laboratory reagent, you will find our Carbon Tetrachloride to be dependably pure. It is ready for prompt delivery in tank cars; non-returnable drums holding 5, 10, and 52½ gallons; cases of 6 one-gallon cans; cases of 12 one-quart cans. Feel free to call upon our technical staff for information or advice.

Pennsylvania Salt Manufacturing Company, Widener Bldg., Philadelphia, Pa.—New York • Chicago • St. Louis • Pittsburgh • Tacoma • Wyandotte.

PENNSYLVANIA SALT MANUFACTURING COMPANY

Chemicals

Some leading chemical products of Pennsylvania Salt Manufacturing Co.

KRYOLITH (Natural Greenland Cryolite)	ACIDS
SALT	HYDROGEN PEROXIDE
CARBON TETRACHLORIDE	BLEACHING AGENTS
CAUSTIC SODA	LYES
ACID-PROOF CEMENTS	FERRIC CHLORIDE
	CARBON BISULPHIDE

TEXTILES
Dyestuffs · Auxiliaries · Finishing Agents

PAPER
Dyestuffs · Auxiliaries

LEATHER
Dyestuffs · Finishing Materials
Synthetic Tanning Agents

PLASTICS
Dyestuffs · Organic Pigments

RUBBER
Organic Pigments

LAKES
Dyestuffs · Intermediates

Our technical staff and laboratory will co-operate with you on your problems

GDC

GENERAL DYESTUFF CORPORATION
435 HUDSON STREET, NEW YORK, N. Y.

Boston, Mass. Philadelphia, Pa. Chicago, Ill.
Providence, R. I. Charlotte, N. C. San Francisco, Cal.

"We"—Editorially Speaking

Recently "we" were permitted to read several letters written by three different executives in British chemical firms to a well-known chemical firm in this country describing conditions and, what is of still greater interest, the mental frame of mind of British subjects at this most momentous period in history. We found them so absorbing that we secured permission to reproduce portions of them here. They were, of course, not written for publicity purposes and the authors had no idea that they would ever reach the printed page. Obviously all names must be omitted but we personally vouch for their authenticity.

Extract from letter of a business man in London dated July 12, 1940.

"I have got passed the stage of worrying about this, (material losses of individuals in England) even though I have got two children who are not yet able to look after themselves. One reaches a point where one can do no more and so long as one has the mental satisfaction of having done everything humanly possible the rest must take care of itself. Other people have been through very much worse vicissitudes than we have experienced and we believe much worse than we are very likely to experience and I certainly do not propose to feel discouraged.

"As a matter of fact since I took on some activity in our local defense in the North of London, I have been much easier in mind about the whole situation, in this way that I feel we have got to go through this in one way or another and let our material stores take care of themselves and I find today I am more engaged in making preparation for the defense of our area in London than I am in looking after the business. I am spending just about the usual amount of time in the office, some evenings and many complete nights on some sort of duty or other. I have got a very interesting job. I cannot very well give you the details of what it is but if there is anything happening in the North of London, I shall be in a position to see exactly what is happening and know all about it.

". . . The most encouraging thing to see at the moment is the way our aeroplanes are shooting down the German planes which are trying to attack this country. There is no doubt that we are only at the beginning of these air battles and the result is still unknown but I do believe most that the result of this whole war may well turn on the question of the ability of our air force to hold off the German aeroplanes. . ."

Extract of letter from the same gentleman under the date of August 14, 1940, a month later.

"I feel sure that if you could possibly be over here and have some experience of the state of mind of the people in this country, you would be very much encouraged. There is absolutely no panic and there is a firm determination on the part of everybody to fight this thing out to the bitter end and if there is any attempt at an invasion I do not believe there will be a German left alive who will try to put his foot into this country.

"I expect you have been reading quite a lot about the aeroplane battles that are going on around our Coast and it would certainly seem as though our air force are doing a wonderful job. One thing that is very curious is that I am dictating the letter to you about nine miles off the South Coast, where these battles are taking place, and up to now in spite of several warnings we have not seen a German aeroplane, so you can see from this that it is certainly a very curious war."

From another business man, not connected with the above, a letter dated July 29, 1940, the following is an extract.

"we are all getting very firmed up about the way the war is going, and I do not think that you will find any signs of despair,—indeed quite the reverse. I believe that rumours circulate through the States that we are going very short of essential things here, but you can take it from me that we are none of us short. We have quite as much as we can tackle and the Governments firm action is keeping the price of commodities down to the level of the lowest purse.

"We do not indulge in wishful thinking here, but I believe that 99.9% of the population have only one prophesy to make about the conclusion of this trouble, and that is, that England will definitely lay the Huns low. It may be a slow job, or it may be a quick one, but you can rest assured that when it comes to be done, it will be done thoroughly, and there will be no doubt who the victors are."

From still a third prominent English chemical executive the following was received on July 12.

"We have, of course, lost quite a number of our staff. One of my juniors is on an aircraft carrier out in the Far East and in a letter I recently had from him it would appear that he is making the most of his opportunities and seeing some of the wonderful sights in that part of the world. Others are in various camps being trained for various duties in the air-force, army and navy.

". . . I am sorry to read that you are so depressed, about the way things are going. We here are quite sure that we are going to win the war, in fact no other alternative can be contemplated. You know there is an old saying that England loses all her battles excepting the last one and I suppose even in modern times the last battle is still the most decisive one in spite of what might go before.

"You will also be interested to know that practically all our men who have not so far been called to the Colours are serving in different home defense organisations. Five out of the chemical department, including myself, are members of the Local Defense Volunteers. Our duties are not so very arduous, although it means we have to lose a lot of sleep. Usually we are on duty every third night, there being two shifts, one starting at 9 p. m. and finishing at 1:30 a. m. and the second shift starting at 1:30 a. m. and ending at 5:30 a. m.

"there is a certain amount of feeling that whilst we here are fighting for our lives, America could support us a little more strongly and firmly with supplies. No one wants, or expects America to send an army, but we do want supplies and these quickly as possible, and as we pay cash, it is just a little bit puzzling why the supplies are not forthcoming in the quantities desired."

Fifteen Years Ago

From Our Files of September, 1925

Administration of liquor sales is among topics to be discussed at convention of National Association of Retail Druggists, at Memphis, Sept. 21 to 25.

Dr. A. G. DuMez of the U. S. Public Health Service will represent the United States at world conference at Brussels, Belgium, to unify formulas of drugs and medicines.

Did You Know That?

The last company store in the State of Rhode Island has just closed its doors after 74 years of operation. It was run by Rumford Chemical.

Invention and patenting are not confined to man alone. On the average eight to twelve patents a week are granted to women and some 20,000 have been granted to the female of the species in the 150 years of the existence of the U. S. patent system.

Prof. E. J. Crane, editor of *Chemical Extracts*, estimates that world-wide chemical research has declined 13 per cent. since the start of the present war.

TECHNOLOGY DEPT.

VOL. 47
Sept. '40

CHEMICAL INDUSTRIES
Statistical and Technical Data Section

No. 3
Part 2

PUBLIC LIBRARY
SEP 23 1940
DETROIT

State of Chemical Trade
Current Statistics (Aug. 31, 1940)—p. 64

WEEKLY STATISTICS OF BUSINESS

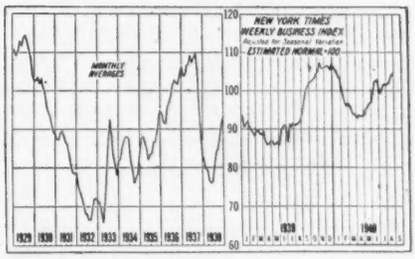
Week Ending	Carloadings 1940	Carloadings 1939	Carloadings % of Change	Electrical Output* 1940	Electrical Output* 1939	Electrical Output* % of Change	Jour. of Com. Price Index	Nat'l Chem. & Drugs	Fertilizer Fats & Oils	Ass'n Fert. Mat.	†Labor Dept. Price Indices Mixed Fert.	†Labor Dept. Price Indices All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
July 27	718,489	655,531	+ 9.6	2,600,723	2,341,822	+11.1	77.4	97.9	46.7	69.7	77.3	74.2	76.8	88.2	101.7	81.6
Aug. 3	718,430	656,553	+ 9.4	2,604,727	2,325,085	+12.0	77.5	97.9	46.4	69.2	77.3	74.1	76.8	90.4	101.5	81.2
Aug. 10	726,976	661,023	+10.0	2,589,318	2,333,403	+11.0	78.0	97.9	44.0	70.2	77.3	74.2	76.7	90.5	102.1	81.0
Aug. 17	743,121	669,793	+10.9	2,606,122	2,367,646	+10.1	77.8	97.8	42.6	70.1	78.6	74.7	76.5	89.5	103.7	81.1
Aug. 24	761,002	683,906	+11.3	2,570,618	2,354,750	+ 9.2	78.6	97.8	43.6	70.1	78.6	74.9	76.4	89.7	104.3	81.0

* K.W.H. 000 omitted. † 1926-1928 = 100.00.

MONTHLY STATISTICS

CHEMICAL:	July 1940	July 1939	June 1940	June 1939	May 1940	May 1939
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	.....	.....	176,846	140,580	191,643	155,902
Consumpt. in mfr. fert.	.....	.....	137,321	106,137	143,742	108,889
Stocks end of month	.....	.....	90,971	80,394	89,282	90,137
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal.	22,457,040	17,643,960	21,422,578	16,837,615	20,953,298	18,655,386
Comp. denat. prod., wine gal	867,244	542,979	510,666	861,139	784,466	695,327
Removed, wine gal.	718,795	527,689	469,215	813,449	704,597	597,659
Stocks end of mo., wine gal.	647,139	670,230	498,981	655,996	458,262	608,836
Spec. denat. prod., wine gal.	9,575,329	6,893,795	9,195,587	7,304,710	9,252,869	7,794,973
Removed, wine gal.	8,777,859	6,859,407	9,155,395	7,130,244	9,332,216	7,605,163
Stocks end of mo., wine gal.	1,957,968	1,352,424	1,163,487	1,325,563	1,127,594	1,157,130
Ammonia sulfate prod., tons *a*	60,718	46,666	58,514	42,380	57,697	33,064
Benzol prod., gal. *b*	11,727,000	8,219,000	11,052,000	7,466,000	10,375,000	5,456,000
Byproduct coke prod., tons *a*	4,612,091	3,354,100	4,374,626	3,078,500	4,243,809	2,396,435
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	680,067	697,609	535,266	704,235	544,352	755,527
Sheets, ship., lbs.	679,766	600,701	587,953	703,764	645,921	626,647
Rods, prod., lbs.	156,643	226,630	169,922	188,714	188,938	221,139
Rods, ship., lbs.	210,930	199,282	203,560	240,930	222,296	259,152
Tubes, prod., lbs.	62,413	54,495	64,756	63,772	67,056	59,539
Tubes, ship., lbs.	64,158	46,844	58,538	55,159	58,211	54,017
Cellulose acetate, sheets, rod, tubes						
Production, lbs.	564,729	561,018	633,808	446,093	702,385	490,684
Shipments, lbs.	407,830	536,674	562,223	378,046	648,535	508,786
Molding comp., ship.; lbs.	777,367	604,476	682,095	702,854	837,151	704,085
Methanol (Bureau of the Census)						
Production, crude, gals.	.....	.....	425,578	343,992	436,883	354,415
Production, synthetic, gals.	.....	.....	3,426,100	2,295,288	3,408,517	1,778,581
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds.	.....	.....	2,236,151	2,361,536	2,639,599	2,652,199
Heavy goods, ship., linear yds.	.....	.....	1,794,124	2,025,048	1,875,376	2,106,754
Pyroxylin spreads, lbs. *c*	.....	.....	3,931,148	4,710,415	4,102,401	4,726,511
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. *d*	.....	.....	$23,286	$12,800	$18,460	$15,000
Crude sulfur *d*	.....	.....	$984	$941	$1,599	$600
Coal-tar chemicals *d*	.....	.....	$1,840	$1,388	$3,318	$1,088
Industrial chemicals *d*	.....	.....	$4,303	$2,401	$4,572	$2,467
Imports						
Chemicals and related prod. *d*	.....	.....	$3,745	$5,300	$5,698	$15,000
Coal-tar chemicals *d*	.....	.....	$542	$819	$473	$1,062
Industrial chemicals *d*	.....	.....	$696	$1,449	$1,091	$2,524
Employment (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	118.8	110.5	119.1	109.8	120.8	112.9
Other than petroleum	117.8	107.8	118.1	107.2	120.6	111.7
Chemicals	140.2	117.1	138.3	116.5	136.2	116.5
Explosives	133.1	91.1	126.4	89.7	118.0	85.6
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	133.9	117.8	133.3	118.7	133.6	119.6
Other than petroleum	132.8	113.6	132.1	113.9	132.6	115.7
Chemicals	168.5	130.8	165.2	131.5	161.9	131.3
Explosives	167.8	102.8	153.7	100.9	141.2	95.6
Price index chemicals*	84.9	83.9	85.1	84.2	85.1	75.6
Drugs & Pharmaceuticals*	95.9	77.2	82.2	77.4	82.0	77.4
Fert. mat.*	67.3	65.3	67.4	66.5	70.8	68.4
Paint and paint mat.	84.6	82.2	85.2	82.4	86.0	81.6
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	.....	.....	90,061	136,016	108,207	148,095
Total phosphate rock	.....	.....	47,545	98,917	61,066	99,844
Total potash fertilizers	.....	.....	1,303	16,679	1,499	22,166
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	.....	.....	98,934	107,640	147,473	147,095
Sodium nitrate	.....	.....	62,598	59,332	79,299	62,010
Total potash fertilizer	.....	.....	10,349	16,425	30,197	10,453

INDUSTRIAL TRENDS



Business: Activity in business and industry during the past month more than sustained its recent high levels. A continued briskness in placing of new orders has resulted in an advance of manufacturers' order backlogs. Steel production, car loadings and electrical output were particularly strong. Employment continued to increase.

Steel: Steel ingot production in August was the third largest in history of steel industry. Operations for the month were at 89.72 per cent. of capacity. Because of large orders already on the books and a belief that consumer demand for steel will expand further in the coming months it is thought that operations will continue to rise and possibly exceed the 1939 high mark of 94½ per cent. Steel exports set a new high for month of July when figure reached 707,809 tons or 14.2 per cent. of the domestic output. Heavy steel business continues better than the lighter forms. The best improvement is in plates, shapes and bars, while sheets and strips have barely held their own. With the railroad and automotive industries preparing to place large orders, the outlook is optimistic.

Electric Output: Production of the electric light and power industry of the U. S. reached its second highest level during week ending August 17th, when 2,606,122,000 kwh were produced. The all-time high was set week ending Dec. 23, 1939, when 2,691,723,000 kwh were produced. The average advantage in production over last year increased from about 9.1 per cent. in July to about 10.6 per cent. in August.

Carloadings: Loadings of revenue freight have been benefited by large movements of heavy freight and in-

State of Chemical Trade
Current Statistics (Aug. 31, 1940)—p. 64

State of Chemical Trade

Current Statistics (August 31, 1940)—p. 65

creased general transportation occasioned by sustained business and industrial activity. A new high in 1940 loadings was reached in week ending August 24th, when total reached 761,002 cars.

Automotive: Output declined sharply in July and August as plants were prepared for shift to new model production. The decline was greater than usual this year, reflecting fact that production had been at high levels and large stocks had accumulated. These stocks were materially decreased, however, as retail sales continued large. Production of 1941 models is being accelerated rapidly and production of 250,000 units is expected this month with 400,000 due to be produced next month.

Construction: Construction contracts awarded during month of July in 37 eastern states amounted to $398,673,000 according to F. W. Dodge Corp. The increase was 23 per cent. over June of this year and 33 per cent. over July 1939. Most conspicuous in increased volume of private construction were commercial and manufacturing buildings and single-family houses. In the manufacturing classification, the chemical industry has been very active with plans for major plant expansions. A substantial portion of heavy construction is now coming from government work associated with defense program.

Textiles: Textile production has considerably increased reflecting chiefly marked increase in cotton and woolen industries. Rayon continues its high levels, while activity at silk mills increased somewhat from its low level.

Retail Trade: The spurt in retail sales which started in August has gathered some momentum and is still accelerating. Department store sales for four weeks ending August 24th were 8 per cent. higher than corresponding period of last year, according to Federal Reserve Board.

Consumer purchasing power is now running about 6 per cent. above last year and is felt that this fact is in part responsible for increased retail sales and indicates a continued upswing of purchasing for the fall season.

Commodity Prices: Basic commodity prices declined somewhat from middle of July to middle of August, with decreases chiefly in prices of commodities influenced by foreign supplies, such as lead, rubber, cocoa and coffee. Since about middle of July prices have again begun to rise gradually.

Outlook: It may be expected that business and industrial activity will expand to some extent next month.

MONTHLY STATISTICS (cont'd)

	July 1940	July 1939	June 1940	June 1939	May 1940	May 1939
FERTILIZER: (Cont'd)						
Superphosphate e (Nat. Fert. Association)						
Production, total	.....	.....	272,235	208,634	303,167	241,109
Shipments, total	.....	.....	199,784	106,606	560,250	532,795
Northern area	.....	.....	125,893	73,709	398,667	372,593
Southern area	.....	.....	73,891	32,397	161,583	160,202
Stocks, end of month, total	.....	.....	1,051,092	943,644	965,828	825,238
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	40,300	51,630	149,890	93,813	406,474	390,982
Total, 12 southern	32,829	47,915	122,457	86,180	328,702	312,313
Total, 5 midwest	7,471	3,715	27,433	7,633	77,772	78,669
Fertilizer employment *i*	.....	.....	88.4	78.9	129.1	113.2
Fertilizer payrolls *i*	.....	.....	78.6	64.9	118.6	108.2
Value imports, fert. and mat. *d*	.....	.....	$2,119	$2,262	$3,406	$3,479
GENERAL:						
Acceptances outst'd'g *f*	$188	$236	$206	$244	$213	$246
Coal prod., anthracite, tons	4,415,000	2,951,000	4,367,000	3,183,000	3,955,000	5,073,000
Coal prod., bituminous, tons	36,080,000	29,391,000	32,340,000	26,101,000	35,468,000	17,927,000
Com. paper outst'd'g *f*	$232	$194	$224	$180	$234	$188
Failures, Dun & Bradstreet	1,175	1,153	1,114	1,119	1,238	1,334
Factory payrolls *i*	96.4	84.4	97.9	96.3	96.3	85.0
Factory employment *i*	99.5	93.5	99.7	93.4	99.0	93.0
Merchandise imports *d*	$232,258	$168,910	$211,390	$178,866	$211,382	$202,502
Merchandise exports *d*	$317,015	$229,631	$350,458	$325,306	$318,051	$246,119
GENERAL MANUFACTURING:						
Automotive production	231,703	209,359	344,636	309,738	391,215	297,542
Boot and shoe prod., pairs	33,467,857	34,211,989	27,904,992	32,312,819	29,261,910	32,708,118
Bldg. contracts, Dodge *j*	$398,673	$299,883	$324,000	$288,316	$328,914	$308,487
Newsprint prod., U. S. tons	82,579	74,932	84,762	80,562	90,207	85,872
Newsprint prod., Canada, tons.	332,689	227,630	315,343	240,545	323,563	250,015
Glass containers, gross‡	4,780	3,506	4,428	4,662	4,700	4,516
Plate glass prod., sq. ft.	8,521,800	6,212,200	9,783,139	9,288,800	11,720,547	8,035,800
Window glass prod., boxes	993,678	690,418	907,865	720,227	1,068,231	728,653
Steel ingot prod., tons	5,595,070	3,564,827	5,532,000	3,523,000	4,841,403	3,295,164
% steel capacity	83.40	52.74	84.97	53.71	72	48.64
Pig iron prod., tons	4,053,945	2,639,022	3,818,000	2,372,000	3,513,683	1,923,618
U.S. cons'pt. crude rub., lg. tons	47,011	43,880	46,506	48,438	51,619	45,484
Tire shipments	4,348,281	5,142,832	6,718,761	5,849,008	5,720,249	4,800,261
Tire production	4,853,869	4,595,362	5,127,384	4,975,604	5,415,314	4,472,767
Tire inventories	9,344,956	8,103,365	8,984,994	8,632,494	10,576,217	9,539,813
Cotton consumpt., bales	.....	.....	556,529	578,436	636,467	605,363
Cotton spindles oper.	21,916,700	21,939,404	21,942,748	21,771,310	22,217,302	21,975,222
Silk deliveries, bales	25,621	26,134	17,307	26,256	18,997	26,150
Wool consumption *s*	.....	.....	25.7	32.6	26.9	29.8
Rayon deliv., lbs.	.....	.....	31,400,000	33,000,000	31,900,000	26,300,000
Hosiery (all kinds) *t*	.....	.....	.....	8,694,258	8,009,504	9,090,063
Rayon employment *i*	306.9	297.0	306.0	286.2	304.3	295.7
Rayon payrolls *i*	314.4	283.2	314.3	271.8	311.4	273.0
Soap employment *i*	84.8	81.9	81.5	79.6	81.4	78.1
Soap payrolls *i*	105.5	99.0	100.4	97.3	98.0	93.9
Paper and pulp employment *i*	117.5	105.8	116.2	106.2	115.2	106.7
Paper and pulp payrolls *i*	126.3	101.2	126.2	104.5	124.3	105.6
Leather employment *i*	80.1	85.5	80.1	84.8	80.8	83.3
Leather payrolls *i*	75.8	82.0	75.7	82.2	76.8	78.7
Glass employment *i*	102.3	96.3	104.9	93.0	103.9	97.4
Glass payrolls *i*	103.9	91.5	111.0	96.0	110.9	96.3
Rubber prod. employment *i*	83.9	78.7	83.6	80.1	84.1	81.2
Rubber prod. payrolls *i*	86.0	81.5	86.4	82.1	87.1	80.0
Dyeing and fin. employment *i*	116.1	119.2	115.7	116.8	122.6	123.7
Dyeing and fin. payrolls *i*	94.5	97.6	93.0	97.1	99.2	103.3
MISCELLANEOUS:						
Oils & Fats Index (26=100)[1]	53.4	50.8	53.1	53.7	57.0	56.0
Gasoline prod. *p*	.....	.....	51,325	50,868	52,183	51,384
Cottonseed oil consumpt., bbls.	258,730	244,827	246,655	256,799	293,705	251,004
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments	.....	.....	$37,897,861	$38,504,857	$43,463,222	$41,853,977
Trade sales (580 establishments)	.....	.....	$21,718,413	$22,341,180	$24,943,448	$25,436,932
Industrial sales, total	.....	.....	$12,582,231	$12,585,957	$14,150,310	$12,578,360
Paint & Varnish, employ. *i*	124.7	122.2	126.4	124.3	125.9	123.4
Paint & Varnish, payrolls *i*	132.7	124.0	136.2	128.9	136.0	129.8

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census; *t* 387 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted; * New series beginning March, 1940; [1] Revised series beginning February, 1940.

General Aniline & Film Earns $2.03

General Aniline & Film Corp. reports for six months ended June 30, 1940, net income of $1,492,197 after depreciation, interest, federal income and estimated excess profits taxes, etc., company states that above net income is equal under the participating provisions of the shares, to $2.03 a share on Class A common and 20 cents a share on Class B common stocks.

This is the first six months earnings statement presented by the company.

Penn. Salt Mfg. Earnings Up

Pennsylvania Salt Manufacturing Co. reports for fiscal year ended June 30, 1940, net profit of $1,726,874 after depreciation, depletion, all state, local and federal taxes (the latter including an estimate for the proposed defense excess profits tax now being considered by Congress), equivalent to $11.51 per share on 150,000 shares of capital stock.

In addition, the company reports nonrecurring income of $1,118,737, representing the profit from the sale of its Philadelphia plant, making a total profit for the fiscal year ended June 30, 1940, of $2,845,611, equal to $18.97 a share.

This compares with $1,294,087 or $8.63 a share in preceding year.

Atlas Powder Nets $2.29

Report of Atlas Powder Co. and subsidiaries for six months ended June 30, 1940, shows net profit of $744,518 after depreciation, federal income taxes at new rates, etc., equivalent after preferred dividends paid, to $2.29 a share on 250,288 no-par shares of common stock, excluding shares held by company.

This compares with $449,913 or $1.12 a share on 249,164 common shares in first half of 1939.

For quarter ended June 30, last, net profit was $379,822 equal to $1.17 a common share, comparing with $229,206 or 58 cents a common share in June quarter of previous year. For quarter ended March 31, 1940, company reported a net profit of $364,696 or $1.11 a common share.

Earnings for quarter ended June 30, 1940 were charged with additional taxes to cover increased rates in the Revenue Act of 1940 for the first half of the year.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Laboratories, q.	$.40	Sept. 12	Sept. 30
Extra	.10	Sept. 12	Sept. 30
Pf. q.	1.125	Oct. 1	Oct. 15
Allied Chemical & Dye Corp.	1.50	Sept. 9	Sept. 20
Colgate-Palmolive-Peet, Pf. q.	1.0625	Sept. 10	Sept. 30
Commercial Alcohols, Pf. q.	.10	Sept. 3	Oct. 15
Clorox Chemical Co. q.	.75	Sept. 14	Sept. 25
Dewey & Almy Chemical	.25	Aug. 31	Sept. 16
Class B	.25	Aug. 31	Sept. 16
Pf. q.	1.25	Aug. 31	Sept. 16
Du Pont de Nemours (interim)	1.75	Aug. 26	Sept. 14
Pf. q.	1.125	Oct. 10	Oct. 25
Durez Plastics & Chemicals	.50	Aug. 20	Sept. 1
6% Pf. q.	.375	Aug. 20	Sept. 1
7% Pf. q.	1.75	Aug. 20	Sept. 1
Freeport Sulphur q.	.25	Aug. 16	Sept. 3
Extra	.50	Aug. 16	Sept. 3
Hercules Powder Co.	.60	Sept. 13	Sept. 10
Heyden Chemical Corp.	.75	Aug. 20	Sept. 3
Lindsay Light & Chem. Co. pf. q.	1.75	Sept. 7	Sept. 16
Mathieson Alkali Works q.	.375	Sept. 9	Sept. 30
Pf. q.	1.75	Sept. 9	Sept. 30
Merck & Co., Inc.	.40	Sept. 20	Oct. 1
Pf. q.	1.50	Sept. 20	Oct. 1
Metal & Thermit Corp.	2.00	Sept. 2	Sept. 11
Pf. q.	1.75	Sept. 20	Sept. 30
Pf. q.	.50	Dec. 13	Dec. 23
Monsanto Chemical Co. q.	.50	Aug. 28	Sept. 16
National Oil Products (interim)	.35	Sept. 16	Sept. 26
Pennsylvania Salt Mfg. Co.	1.75	Aug. 31	Sept. 14
Potash Co. of America	.40	Sept. 14	Oct. 1
Southern Phosphate Corp.	.15	Sept. 16	Sept. 30
Texas Gulf Sulphur Co.	.50	Aug. 30	Sept. 16
Union Carbide & Carbon Corp.	.60	Sept. 6	Oct. 1
United Carbon Co.	.75	Sept. 14	Oct. 1

Earnings Statements Summarized

Company:	Annual dividends	Net income 1940	Net income 1939	Common share earnings 1940	Common share earnings 1939	Surplus after dividends 1940	Surplus after dividends 1939
Amer. Smelting & Refining:							
Six months, June 30	*y* $3.00	$6,405,920	$5,429,674	$2.12	$1.68	$1,368,417	$392,171
Anaconda Copper Mining Co.:							
Six months, June 30	*y* 1.50	17,549,546	7,170,336	2.02	.83	.....	.....
Atlantic Rayon Corp.:							
June 30 quarter	*y* .10	†47,373	13,316	....	.05	.....	.....
Twelve months, June 30	*y* .10	88,387	155,593	.34	.68	.....	.....
Columbian Carbon Co.:							
Six months, June 30	*y* 4.50	1,858,280	1,633,599	3.46	3.04	783,468	558,787
General Aniline & Film Corp.:							
Six months, June 30	*ay* 1.50 / *by* .15	1,492,197	*.....	*a* 2.03 / *b* .20	...	.....	.....
International Nickel Co.:							
June 30 quarter	2.00	8,240,179	8,226,137	.53	.53	467,619	453,579
Six months, June 30	2.00	18,060,293	17,773,438	1.17	1.15	2,515,174	2,228,320
International Vitamin Corp.:							
Year, June 30	*y* .30	120,052	97,694	.59	.48	.....	.....
Standard Oil of Indiana:							
Six months, June 30	*y* 1.50	20,497,223	14,979,694	1.34	.98	.....	.....
Vanadium Corp.:							
Six months, June 30	*y* 1.00	916,690	380,095	2.43	1.01	.....	.....
Vick Chemical Co.:							
Year, June 30	*y* 3.00	2,792,165	2,795,896	*h* 4.05	*h* 4.00	.....	.....

a On Class A shares; *b* On Class B shares; *c* On combined Class A and Class B shares; *d* Deficit; *f* No common dividend; *j* On average number of shares; *k* For the year 1940; *p* On preferred stock; On Class A shares *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § Plus extras; *n* Preliminary statement; *h* On shares outstanding at close of respective periods; ** Indicated quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period. ‡‡ Indicated earnings as compiled from quarterly reports. † Net loss. * Not available.

Price Trend of Representative Chemical Company Stocks

	July 27	Aug. 3	Aug. 10	Aug. 17	Aug. 24	Net gain or loss last mo.	Price on Aug. 26, 1939	1940 High	1940 Low
Air Reduction Co.	40	43¾	40½	39	40¾	+ ¾	52	58⅛	36½
Allied Chemical and Dye	148½	150½	157½	152	153⅜	+4⅞	161½	182	135½
Amer. Agric. Chem.	14⅛	14⅜	14¼	14⅝	16	+1⅞	16⅛	21	12⅛
American Cyanamid "B"	32¾	33¾	32¾	32	33¼	+ ½	27⅞	39⅞	26
Columbian Carbon	81¼	81	80	78	78	—3¼	85	98¾	71
Commercial Solvents	9¼	9¾	9⅞	9¼	9¼	0	10	16⅜	8
Dow Chemical Co.	145	146	148	145⅜	152	+7	123	171	137
du Pont de Nemours	157	165¼	164	161	165	+8	160	189¼	146½
Hercules Powder	79¾	81½	82	80½	84	+4¼	73⅞	100½	76¼
Mathieson Alkali	25	25	26	25½	26	+1	21	32¾	21
Monsanto Chem. Co.	89½	89	91¼	93	91½	+2	100½	119	86¾
Standard Oil of N. J.	33½	33¼	34	34	34	+ ½	39⅞	46½	29⅞
Texas Gulf Sulphur	31	32⅞	31⅝	30½	31¾	+ ¾	28½	35¾	26⅞
Union Carbide and Carbon	68	70	70	68	71¾	3¾	80	88⅜	59⅞
U. S. Industrial Alcohol	18¾	19	18⅜	17½	18¾	0	15	28	14

Mathieson Net Tripled

Report of Mathieson Alkali Works, Inc., for quarter ended June 30, 1940, shows net profit of $463,398 after depreciation, depletion, federal income taxes, etc., equal after dividend requirements on 7% preferred stock, to 51 cents a share on 828,171 shares of common stock.

This compares with $174,098 or 16 cents a common share in June quarter of previous year, and $364,142 or 39 cents a share for quarter ended March 31, 1940.

For six months ended June 30, last, net profit was $827,540, equal to 90 cents a share on common, comparing with $336,046 or 31 cents a common share in first half of 1939.

Hercules Reports $2.30

Hercules Powder Co. reports for six months ended June 30, 1940, net profit of $3,293,066 after depreciation, federal income taxes, etc., equivalent after dividend requirements on preferred stock, to $2.30 a share on 1,316,710 shares of common stock.

This compares with $2,269,470 or $1.52 a share on common in first half of 1939.

Chemical Finances

August, 1940—p. 65

Chemical Stocks and Bonds

PRICE RANGE August 1940 Last	High	1939 Low	High	1938 Low	High	Low	Sales	Stocks	Par $	Shares Listed	Dividends	Earnings** $-per-share-$ 1939	1938	1937
							Number of shares August 1940	1940						
NEW YORK STOCK EXCHANGE														
57	70¼	50	71½	53	61	46¼	2,000	30,800	Abbott Labs.	No	752,468	$2.05	2.61	2.43	2.51
41¾	58⅛	36½	68	45¼	67⅞	40	23,800	224,200	Air Reduction	No	2,563,992	1.50	1.98	1.47	2.86
156	182	135½	200½	151½	197	124	8,600	91,200	Allied Chem & Dye	No	2,214,099	9.00	9.50	5.92	11.19
15½	21	12⅛	24½	16	28½	22	4,000	30,000	Amer. Agric. Chem	No	627,987	1.30	1.22	2.23	2.95
5	8¼	4⅛	11⅞	5½	15	9	3,200	46,200	Amer. Com. Alcohol	No	280,934	....	—.40	—2.05	3.23
29¾	35½	23	37	21	31½	20	1,500	14,600	Archer-Dan.-Midland	No	545,416	1.10	3.02	.43	5.03
63½	80½	57	71	50	68	36	900	15,200	Atlas Powder Co.	No	250,288	3.00	3.82	2.69	4.40
114	124¾	112½	127	116	126¼	105	140	4,710	5% conv. cum. pfd.	100	68,597	5.00	18.94	14.77	20.90
29½	35½	20	30¼	13⅝	26⅝	9	35,300	583,500	Celanese Corp. Amer.	No	1,000,000	.50	3.53	.26	2.04
117½	119	105½	109⅞	84	96	82	1,150	24,830	prior pfd	100	164,818	7.00	37.72	15.05	27.07
11	20	10⅛	18	11½	17	7⅛	24,700	278,900	Colgate-Palm.-Peet	No	1,962,087	1.00	2.74	1.77	—.35
76¼	98¾	71	96	73	98½	53¾	1,700	19,700	Columbian Carbon	No	537,406	4.50	5.32	5.13	8.31
9⅞	16⅝	8	16	8⅝	12¼	5⅞	28,200	716,500	Commercial Solvents	No	2,636,878	....	.61	—.11	.60
50⅛	65⅛	44½	67½	54⅞	70¾	53	9,600	128,600	Corn Products	25	2,530,000	3.00	3.32	3.18	2.52
169	179	165	177	150	177	162	500	5,300	7% cum. pfd.	100	245,738	7.00	41.18	39.69	32.96
14	23¼	12½	32⅝	18	40⅞	25	970	19,870	Devoe & Rayn. A.	No	95,000	....	2.05	—1.73	4.05
141	171	137	144⅝	101½	141	87⅞	4,800	61,000	Dow Chemical	No	1,034,988	3.00	3.76	3.91	4.15
167¼	189¼	146½	188½	126¼	154¾	90½	23,200	289,700	DuPont de Nemours	20	11,065,762	7.00	7.70	3.74	7.37
123¼	126	114	124⅛	112	120½	109½	1,400	39,350	4½% pfd.	No	1,688,850	4.50	52.25	37.37	165.48
130½	166⅜	117	186⅛	138⅛	187	121½	11,400	124,100	Eastman Kodak	No	2,476,013	6.00	8.55	7.54	9.76
172¼	178	155	183½	155½	173	157	60	1,380	6% cum.	100	61,657	6.00	349.31	251.22	362.45
30⅞	38¾	24¾	36	18¼	32	19⅞	9,000	152,800	Freeport Sulphur	10	796,380	1.50	2.76	1.87	3.30
7	10	5½	10⅞	7	12⅛	6¾	1,700	32,000	Gen. Printing Ink	1	735,960	.80	.94	.62	1.32
14⅜	19¾	11	24½	14	28½	13	4,300	79,400	Glidden Co.	No	829,989	.50	1.70	—.29	2.62
40	44⅝	30	47	34	51½	37	200	6,400	4½% cum. pfd.	50	199,940	2.25	4.27	1.03	12.72
98	113⅛	89⅞	112¼	93	111	76¾	600	13,600	Hazel Atlas	25	434,409	5.00	6.64	4.97	6.67
89⅝	100¼	76¼	101½	63	87	42¾	5,200	73,100	Hercules Powder	No	1,316,710	2.85	3.65	1.95	2.97
127	133½	126¼	135½	128½	135¼	126⅜	260	4,110	6% cum. pfd.	100	96,194	6.00	60.87	35.31	50.75
22½	29	16⅜	29½	16¾	30⅝	14⅜	2,900	62,600	Industrial Rayon	No	759,325	.75	1.77	.24	.34
23	47⅜	21¼	46¼	17½	34½	15	1,200	50,500	Interchem.	No	290,320	.40	4.10	.32	1.44
104¼	113	91	109½	90	98	80	190	4,690	6% pfd.	100	65,661	6.00	24.27	7.39	12.26
1¼	2⅜	1	3⅝	1½	3⅞	2	900	43,500	Intern. Agricul.	No	436,048	....	—1.32	—0.003	.16
23	38	18¼	41	16	29	15	600	12,900	7% cum. pfd.	100	100,000	....	1.26	7.01	7.70
27¾	38⅞	19⅜	55⅜	35	57⅝	38⅞	68,600	675,900	Intern. Nickel	No	14,584,025	2.00	2.39	2.09	3.31
33	37¼	28⅞	38	29	30¼	19½	2,100	11,300	Intern. Salt	No	240,000	1.75	1.92	2.29	2.11
16⅞	23⅜	14⅜	22½	14½	24	19⅛	1,200	12,900	Kellogg (Spencer)	No	509,213	1.10	1.39	.71	2.81
40	53¾	30	56¾	36½	58⅜	23¼	14,700	143,800	Libbey Owens Ford	No	2,513,258	2.75	3.21	1.57	4.19
14½	18⅜	10⅛	19	13½	21½	12⅛	3,500	74,300	Liquid Carbonic	No	700,000	1.00	1.62	1.81	2.37
27⅞	39¼	21	37⅜	20¾	36⅞	19¾	3,900	81,600	Mathieson Alkali	No	828,171	1.50	1.12	1.01	1.81
90	119	86¾	114⅜	85⅝	110	67	5,500	103,900	Monsanto Chem.	No	1,241,816	3.00	4.01	2.35	4.40
116¼	119	110	121	110	117½	111	170	2,650	4½% pfd. A.	No	50,000	4.50	54.29	31.51	49.99
119	121¼	113½	122½	112	...	...	160	2,230	4½% pfd. B.	No	50,000	4.50	54.29	31.51	49.99
17½	29¼	14⅛	27½	17⅞	31	17⅛	15,100	205,400	National Lead	10	3,095,100	.87	1.28	.75	.95
163	173⅝	160	173⅛	152	178½	154	100	3,600	7% cum. "A" pfd.	100	213,793	7.00	27.04	20.03	22.86
140	148⅛	132	145	132	145½	127	350	2,670	6% cum. "B" pfd.	100	103,277	6.00	55.30	35.97	43.77
7⅜	14¼	6⅛	17¾	8½	19½	9⅞	8,900	156,100	Newport Industries	1	620,459	....	.66	—.08	2.22
51¼	64⅝	42	70	50	76¼	40	6,200	112,700	Owens-Illinois Glass	12.50	2,661,204	2.00	3.17	2.02	3.51
61¼	71¾	53	66	50⅝	59	39½	12,100	154,200	Procter & Gamble	No	6,325,087	2.25	3.80	3.59	4.08
116	118¼	112¼	119¾	112	122¼	114	660	6,930	5% pfd.	100	169,517	5.00	298.55	161.81	157.05
8¼	13¼	7⅝	17¼	9⅞	18⅝	10	5,100	138,700	Shell Union Oil	No	13,070,625	.50	.77	.70	1.44
102¾	108¼	95¼	107⅞	98½	106½	93	2,800	12,500	5½ cum. pfd.	100	341,000	5.50	34.61	33.18	60.59
16	23¼	12¼	29½	15½	34¾	18½	5,100	55,300	Skelly Oil	No	995,349	.75	1.99	2.27	6.07
25½	29	20¾	30	22¾	35½	24¾	28,700	416,400	S. O. Indiana	25	15,272,020	1.25	2.24	1.82	3.16
33⅜	46½	29⅞	53½	38	58⅝	39¾	51,200	790,700	S. O. New Jersey	25	26,618,065	1.25	3.27	2.86	5.64
5½	7	4¼	9¼	4	8	3⅞	5,400	81,100	Tenn. Corp.	5	853,696	....	.41	.46	1.09
35⅜	47⅝	33	50¾	32½	49⅝	37⅝	51,100	525,900	Texas Corp.	25	10,876,882	2.00	3.02	2.13	5.02
31¼	35¾	26⅞	38½	26	38	26	11,600	139,700	Texas Gulf Sulphur	No	3,840,000	2.00	2.04	1.81	3.02
74¼	88¾	59⅞	94¼	65½	90⅞	57	24,700	342,300	Union Carbide & Carbon	No	9,277,288	1.90	3.86	2.77	4.81
49	65⅝	42½	69½	52	73½	39	1,900	35,700	United Carbon	No	397,885	3.00	3.81	3.78	5.91
18¾	28	14	29⅜	13½	30¼	13½	2,100	92,100	U. S. Indus. Alcohol	No	391,238	....	.20	—1.08	1.24
32	43⅞	25	40	16	38⅞	11½	30,700	448,400	Vanadium Corp. Amer.	No	377,140	1.00	3.25	.61	2.22
23	31¼	19	29¾	18¼	25¼	13½	900	22,300	Victor Chem.	5	696,000	1.40	1.59	1.05	1.01
2	4¼	1⅜	5¾	2½	5⅝	2⅜	2,100	46,800	Virginia-Caro. Chem.	No	486,122	....	—1.57	—1.89	—.05
18⅜	31⅜	14	33¾	17	32½	15⅜	1,000	22,400	6% cum. part. pfd.	100	213,052	....	2.41	1.90	5.88
24¼	29¼	27¾	39¼	15¼	20¼	10	2,200	39,100	Westvaco Chlorine	No	339,362	1.85	2.81	1.52	1.46
34	39¼	28⅞	39½	29	31½	20	3,600	24,900	cum. pfd.	30	192,000	1.50	6.64	4.19	4.09
NEW YORK STOCK EXCHANGE															
33⅞	39⅞	26	35¾	18⅜	30¼	15½	23,300	420,400	Amer. Cyanamid "B"	10	2,618,387	.60	2.07	.91	2.09
125	127	98	112¾	76	92	50	1,400	19,100	Celanese, 7% cum. 1st pfd.	100	148,179	7.19	34.17	8.95	22.32
4	5⅞	2⅜	6¾	3	6¾	3	700	10,600	Celluloid Corp.	15	194,952	....	—.70	—2.73	—.92
7	7¾	7	7⅞	4½	12	6½	....	700	Courtauld's Ltd.	£1	24,000,000	.13	4.92%	.26%	8.64%
5	8⅛	5	9¼	5	9⅞	6	600	14,900	Duval Texas Sulphur	No	500,000	....	1.25	.71	.43
75	92	60	68	30	41¾	27	325	15,450	Hevden Chem. Corp.	100	125,497	2.00	5.98	2.07	3.94
88⅜	104	65	117	90	115½	55	3,400	45,600	Pittsburgh Plate Glass	25	2,192,824	4.00	4.94	3.00	8.53
76	100	62½	113½	81	117⅜	66	1,350	34,950	Sherwin Williams	25	638,927	2.75	5.96	2.43	8.76
110½	114¾	106	116	106½	114⅛	107	140	2,240	5% cum. pfd.	50	132,189	5.00	35.08	8.76	45.50
PHILADELPHIA STOCK EXCHANGE															
175	185	158¾	179	135	167	121½	100	2,785	Pennsylvania Salt	50	150,000	6.00	10.52	6.29	11.79

PRICE RANGE August 1940 Last	High	1939 Low	High	1938 Low	High	Low	Sales	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE							August 1940	1940				
103	105¾	91	103¾	98	105⅝	99⅛	222,000	1,549,000	Amer. I. G. Chem. Conv.	1949	5½	M-N	$22,460,000
29	41	27½	41½	19	38	25¼	48,000	814,000	Anglo Chilean Nitrate inc. deb.	1967	4½	J	10,400,000
105	107½	105	108⅝	101¾	106⅛	102⅜	21,000	219,000	Dow Chemical	1951	3	J-D	5,000,000
105½	106⅛	100	102½	90	94	93	55,000	1,050,000	Industrial Rayon	1948	4½	J-J	7,100,000
30	39¾	28	37	21½	35⅝	24¾	70,000	1,110,000	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
21	21	21	30	16	35⅝	24¾	....	5,000	Ruhr Chem.	1948	6	A-O	1,500,000
97¼	97¾	93½	95¾	88¾	...	...	347,000	5,006,000	Shell Union Oil	1954	2½	J-J	85,000,000
104¾	106⅜	101⅛	106¼	97⅜	105⅝	100	216,000	2,174,000	Standard Oil Co. (New Jersey) deb.	1961	3	J-D	85,000,000
105⅛	106⅜	100⅝	106½	94¼	103	98	267,000	2,159,000	Standard Oil Co. (New Jersey) deb.	1953	2¾	J-J	50,000,000
105	106¾	102	105⅞	95¼	...	...	299,000	2,640,000	Texas Corp.	1959	3	A-O	40,000,000

* Paid in 1939, including extras but excluding dividends paid in stock.

** For either fiscal or calendar year.

New Trade Marks of the Month

BETRAMINE
430,535

CELANESE
430,723

NALON
431,018

425,106

POLYNOL
425,158

ATLAS
427,757

THIO-PHIL
429,012

PURIZED
434,041

PURATIZED
434,042

SOLOX
430,366

PENTALYN
430,398

PETROGEL
427,129

ULTRAFOS
429,622

ROLLITE
429,096

TEMPIL
426,579

VITA BLOOM
429,807

SPRÄ KAST
429,237

Sava-Cola
429,378

NOPCOSORB
430,285

Klenzcraft
430,636

MULTIVIN
430,637

DER-O-CIDE
430,862

PARAPHEN
430,875

SULFO-MERTHIOLATE
431,014

APEX
430,212

GAR KEM
429,609

SYNTHETONE
430,043

RAYBOND
431,218

RAYBOOK
431,219

RAYBRITE
430,220

RAYACETA
430,221

RAYSELECT
430,222

RAYWHITE
430,223

FLEXON
431,228

PARAFROST
430,819

CHORIONE
431,048

TAPS
430,699

STRIKE
430,716

DUS-COP
431,110

SOLCOPPER
431,166

ROOM SERVICE
431,305

CREMOSILICATE
431,331

DURALENE
429,346

GRACO
431,006

PERMOUNT
429,301

CITRADEX
418,959

PETROMIX
427,319

Trade Mark Descriptions †

430,535. Alframine Corp., New York, N. Y.; Apr. 9, 1940; for soapless soap powders. Since Aug. 10, 1939.

430,723. Celanese Corp. of Amer., New York, N. Y.; Apr. 13, 1940; for soap. Since Apr. 12, 1940.

431,018. Naylee Chem Co., Philadelphia, Pa.; Apr. 20, 1940; for concentrated soapless cleaner in various forms. Since Apr. 12, 1940.

425,106. Aluminum Ore Co., East St. Louis, Ill.; Nov. 1, 1940; for various ores and chemicals. Since May 25, 1938.

425,158. Minnesota Mining & Manufacturing Co., St. Paul, Minn.; Nov. 2, 1939; for interaction products of aldehyde and ketones and other chemicals and chemical specialties. Since March 29, 1938.

427,757. H. Kohnstamm & Co., New York, N. Y.; Jan. 23, 1940; for coal tar dyes. Since Jan. 1, 1884.

429,012. Sulphur Products, Inc., Wooster, Ohio; Feb. 28, 1940; for hydrophilic, colloidal, sulfur preparation for local application on skin as Fungicide in treating skin infections. Since Jan. 10, 1940.

430,041-430,042. Frank J. Sowa (Silbrite Chemical Co.), New York, N. Y.; March 27, 1940; for chemical composition for rendering materials antiseptic. Since Feb. 23, 1940.

430,366. U. S. Industrial Chemicals, Inc., New York, N. Y.; Apr. 4, 1940; for alcohol type solvent having general use in industrial arts. Since March, 1931.

430,398. Hercules Powder Co., Wilmington, Del.; Apr. 5, 1940; for synthetic resin. Since March 11, 1940.

427,129. Atlas Powder Co., Wilmington, Del.; Jan. 4, 1940; for dynamite. Since March 31, 1937.

429,622. The Phosphate Mining Co., New York, N. Y.; March 15, 1940; for fertilizer and fertilizer materials. Since March 4, 1940.

429,096. Jackson-Wheeler Metals Service, Inc., Brooklyn, N. Y.; March 1, 1940; for bearing metals and alloys. Since Feb 5, 1940.

426,579. The Tempil Corp., Inc., New York, N. Y.; Dec. 14, 1939; for temperature indicating pellets made of chemical compounds, metals, and alloys. Since Aug. 1, 1939.

429,807. William Bennett Chapman, Colorado Springs, Colo.; March 21, 1940; for preparation of vitamin B, for supplemental nourishment of plants.

429,237. Woburn, Inc., Brooksville, Fla., and Harrison, N. J.; March 5, 1940; for germicides and disinfectants. Since April 22, 1939.

429,378. Carl A. Tindall (Carl A. Tindall Co.), Indianapolis, Ind.; March 8, 1940; for chemical preparation to be sprayed on coal to increase combustibility of the coal. Since Dec. 28, 1939.

430,285. National Oil Products Co., Harrison, N. J.; April 2, 1940; for emulsifiers. Since Nov. 29, 1939.

430,636. United Buyers Corp. (Foodcraft Products), Chicago, Ill.; April 10, 1940; for drain pipe cleaner, lye, bluing, ammonia, and household bleach. Since Feb. 10, 1937.

430,637. William Warner & Co., Inc., New York, N. Y.; April 10, 1940; for poly vitamin product containing vitamins A, the entire B complex, C, D, and E. Since April 2, 1940.

430,862. Derris, Inc., New York, N. Y.; April 17, 1940; for insecticides. Since Feb. 1, 1940.

430,875. Phoenix Color & Chemical Co. Inc., Paterson, N. J.; April 17, 1940; for dyestuffs. Since Oct. 6, 1939.

431,014. Eli Lilly & Co., Indianapolis, Ind.; April 20, 1940; for surgical powder for topical application to infected tissue and areas. Since June 26, 1939.

430,212. Barta-Griffin Co., Worcester, Mass.; April 1, 1940; for printing ink dryers. Since July 18, 1939.

429,609. Gardner Laboratories, Inc., Chicago, Ill.; March 15, 1940; for chemical compounds used in hardening, dressing and water-proofing concrete surfaces. Since Nov., 1914.

430,043. Southern Varnish Corp., Roanoke, Va.; March 27, 1940; for synthetic finish for wood furniture in nature and appearance of a varnish. Since Feb. 19, 1940.

431,218-431,223. Rayonier, Inc., San Francisco, Calif.; April 25, 1940; for wood pulp. Since Jan. 1, 1940.

431,228. Standard Oil Development Co., Linden, N. J.; April 25, 1940; for synthetic rubber. Since March 22, 1940.

430,819. J. Abramson & Sons, Inc., Brooklyn, N. Y.; April 16, 1940; for insecticides, germicides and antiseptics. Since March 1, 1934.

431,048. Hospital Liquids, Inc., Chicago, Ill.; April 22, 1940; for anterior pituitary-like sex hormones chorionic gonadatrophin in powdered form or in solutions. Since Oct. 8, 1937.

430,699. Standard Oil Development Co., Linden, N. J.; April 12, 1940; for inhibitor employed in motor oils to decrease corrosiveness. Since March 4, 1940.

430,716. W. H. Barber Co., Minneapolis, Minn.; April 13, 1940; for household insect spray. Since April 1, 1940.

431,110. General Chemical Co., New York, N. Y.; April 23, 1940; for insecticides and fungicides. Since March 26, 1940.

431,166. The Sherwin-Williams Co., Cleveland, Ohio; April 24, 1940; for insecticides and fungicides. Since Feb. 19, 1940.

431,305. Hotel Research Laboratories, Inc., New York, N. Y.; April 27, 1940; for solid fuel composed mainly of alcohol. Since Oct. 26, 1939.

431,331. Sharp & Dohme, Inc., Philadelphia, Pa.; April 27, 1940; for preparation for treatment of gastric disturbances. Since April 23, 1940.

429,346. Duralux Co., Inc., New York, N. Y.; March 8, 1940; for resinous powder and resinous liquid preparation used in making dentures. Since Nov. 4, 1939.

431,006. The Gray Chemical Co., Roulette, Pa.; April 20, 1940; for carbonaceous material—namely activated carbon, charcoal, and wood tar. Since March 1, 1940.

429,301. Fisher Scientific Co., Pittsburgh, Pa.; March 7, 1940; for adhesive solution to attach cover glasses to microscope slides. Since March 1, 1940.

418,959. Baxter Laboratories, Inc., Glenview, Ill.; May 1, 1939; for solution for preserving blood. Since April 26, 1939.

427,319. L. Sonneborn Sons, Inc., New York, N. Y.; Jan. 10, 1940; for blend of emulsifying agents and mineral oil used as base for manufacture of soluble oils. Since Dec. 11, 1939.

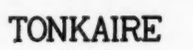
† Trademarks reproduced and described include those appearing in *Official Gazette of the U. S. Patent Office*, June 11 to July 16, 1940.

New Trade Marks of the Month

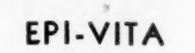
428,792

431,922

428,317



432,178



432,666

431,944

429,636

432,447

431,012

429,117

431,402

432,612

430,442

429,756

429,563

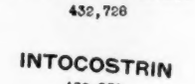
430,779

432,727

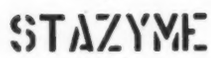
429,890

432,728

430,203



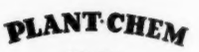
432,832



430,208

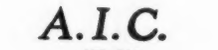
430,443

430,177



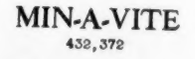
431,635

431,318



430,642

430,780



432,372

430,585

431,013

427,298

431,468

415,926

431,574

432,299

431,802

(*Trade Mark Descriptions Continued*)

428,792. Beacon Chemical Corp., Philadelphia, Pa.; Feb. 23, 1940; for disinfectant, bleach, water softener, and germicide, also having incidental cleansing properties. Since Feb. 16, 1940.

429,117. I. G. Farbenindustrie. A. G. Frankfort-on-the-Main, Germany; March 2, 1940; for synthetic resins capable of absorbing or exchanging ions contained in fluids. Since April 4, 1939.

429,563. The Daho Chemical Corp., New York, N. Y.; March 14, 1940; for chemical compound used as disinfecting agent. Since Nov. 15, 1938.

430,203. Andrew Wilson, Inc., Springfield, N. J.; March 30, 1940; for combined insecticide and fungicide. Since March 8, 1940.

430,208. A. E. Staley Manufacturing Co. Decatur, Ill.; April 1, 1940; for industrial starch used as size in paper manufacture. Since Dec. 28, 1939.

431,318. Monsanto Chemical Co., St Louis, Mo.; April 27, 1940; for chemical preservatives for wood, lumber and other cellulosic materials. Since March 28, 1940.

431,468. Phelps Dodge Refining Corp. New York, N. Y.; May 1, 1940; for chemical substances. Since Sept. 20, 1939.

431,922. The Pennsylvania Salt Manufacturing Co., Philadelphia, Pa.; May 14, 1940 for coagulants in filtering operations, in water purification, and a sizing agent in manufacture of paper. Since Oct. 24, 1939.

431,944. California Spray Chemical Corp., Wilmington, Del., and Richmond, Calif.; May 15, 1940; for parasiticides. Since May 6 1940.

430,442. Galen Co., Inc., Berkeley, Calif.; April 6, 1940; for vitamin B containing compositions. Since Sept. 18, 1939.

430,443. Galen Co., Inc., Berkeley, Calif.; April 6, 1940; for vitamin B containing compositions. Since Sept. 18, 1939.

430,585. Agro-Chem Laboratories, Inc., Toledo, Ohio; April 10, 1940; for fertilizers. Since Jan. 20, 1940.

415,926. Victor Manufacturing & Gasket Co., Chicago, Ill.; Feb. 10, 1939; for fluid seals composed in part of synthetic rubber and other plastic polymers; and partly of metal. Since March 1, 1937.

428,317. MacDermid, Inc., Waterbury, Conn.; Feb. 7, 1940; for Chemical preparation for cleaning metals prior to electroplating. Since Jan. 10, 1940.

429,636. American Lecithin Co., Cleveland, Ohio; March 15, 1940; for lecithin and associated phosphatides with vegetab oil. Since Jan. 23, 1930.

429,756. Mojave Products, Inc., Los Angeles, Calif.; March 18, 1940; for aqueous solution of the metallic and non-metallic sulfates. Since Jan. 29, 1940.

429,890. American Lecithin Co., Cleveland, Ohio; March 23, 1940; for lecithin and associated phosphatides in various grades and stages of purity. Since July 21, 1930.

430,177. The Emerson Drug Co. of Baltimore City, Baltimore, Md.; March 30, 1940; for effervescent calcium gluconate. Since May 19, 1937.

430,642. Automotive Improvement Co., Inc., Manteno, Ill.; April 11, 1940; for chemical preparations. Since July 18, 1940.

431,013. Eli Lilly & Co., Indianapolis, Ind.; April 20, 1940; for products containing vitamins B, and C. Since Feb. 5, 1940.

431,574. Vestal Chemical Co., St. Louis, Mo.; May 5, 1940; for cleaner and porcelain enamelware and the like. Since Feb. 7, 19[illegible]

432,178. Compagnie-Parento, Inc., Croton-on-Hudson, N. Y.; May 21, 1940; for preparation to remove sharpness of alcohol used in cosmetics and allied fields. Since Jan. 19, 1938.

432,447. Miller Chemical & Fertilizer Corp., Baltimore, Md.; May 28, 1940; for insecticide and fungicide. Since March 1, 1940.

431,402. Air Reduction Sales Co., New York, N. Y.; April 30, 1940; for metallic welding rods. Since 1920.

430,779-430,780. Lenco Laboratories, Inc., Galesburg, Ill.; April 15, 1940; for preparation for preventing condensation of moisture on glass. Since Nov. 13, 1939 on "Glasite," since Nov., 1938, on "Lensite."

432,299. Leo E. Concannon (Cannon Chemical Co.), Everett, Mass.; May 24, 1940; for preparation for dissolving, removing and preventing rust and scale. Since Dec. 27, 1938.

432,666. William R. Warner & Co., Inc., New York, N. Y.; for polyvitamin product. Since May 28, 1940.

431,012. Eli Lilly & Co., Indianapolis, Ind.; April 20, 1940; for medicinal preparation containing vitamins A and D. Since Feb. 5, 1940.

432,612. The Norwich Pharmacal Co., Norwich, N. Y.; June 3, 1940; for combination vitamin and mineral product. Since April, 1940.

432,727-432,728. National Carbon Co., Inc., New York, N. Y.; June 6, 1940; for carbon bonded carbon materials for use in filtering and diffusing gases and liquids and in electrolytic operations. Since April 4, 1940 on "Carbocell," since April 11, 1940 on "Graphicell."

432,832. E. R. Squibb & Sons, New York, N. Y.; June 8, 1940; for paralyzant preparations. Since May 31, 1940.

431,635. University Hydroponic Service, Berkeley, Calif.; May 6, 1940; for chemical fertilizing salts for stimulating vegetable growth.

432,372. American Drug & Chemical Co., Minneapolis, Minn.; May 27, 1940; for fertilizing compound. Since May 15, 1940.

427,298. The G. E. Conkey Co., Cleveland, Ohio; Jan. 10, 1940; for disinfectants and germicides. Since June, 1905.

431,802. American Bitumuls Co., Wilmington, Del., and San Francisco, Calif.; May 11, 1940; for bituminous waterproofing composition. Since April 16, 1940.

WATCH FOR

Chemical Industries

Buyer's Guidebook

Next Month

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 209

A Complete Check—List of Products, Chemicals, Process Industries

Cellulose

Organic solvent soluble cellulosic film plasticized with glycol diglycolate. No. 2,207,702. William D. R. Straughn to E. I. du Pont.

Process for producing water-repellent cellulose-containing materials and products therefrom. No. 2,207,740. Walther Kaase and Ernst Waltmann to Heberlein Patent Corp.

In making paper from cellulose fibers, improvement consisting in adding an insoluble aluminum phosphate pigment. No. 2,208,574. Louis C. Fleck to Paper Patents Co.

Process for waterproofing cellulose fabrics. No. 2,209,383. Louis H. Bock to Rohm & Haas Co.

Cellulose organic acid ester composition containing acyl amides. No. 2,211,327. Jack J. Gordon to Eastman Kodak Co.

Preparation of cellulose for etherification. No. 2,211,337. Carl J. Malm and Loring W. Blanchard, Jr., to Eastman Kodak Co.

Chemical Specialty

Process for separating fat of oil soluble vitamins from fish or vegetable oils. No. 2,207,712. James G. Blasco to Natural Vitamins Corp.

Insecticidal spray composition. No. 2,707,721. Gerald H. Coleman to The Dow Chemical Co.

Method for removal of fluoride from drinking water. No. 2,207,725. Elias Elvove to Government of U. S.

Method treating an earth or rock formation by introducing thereinto a liquid silicate mixture which is capable of spontaneous transformation into a gel. No. 2,207,759. Hans A. Reimers to The Dow Chemical Co.

Method deodorizing milk products. No. 2,207,817. Milton E. Parker and Fred C. Brengman to Beatrice Creamery Co.

Hydrogenation catalyst and method of preparing the same. No. 2,207,868. Robert W. Martin to Hercules Powder Company.

Vapor emanator comprising hollow annular body to contain vaporizable fume emitting substance. No. 2,207,889. Russell B. Kingman to Housekeeping Products Co.

Alcohol fuel of the nitrocellulose-geltype. No. 2,207,894. Philip B. Onderdonk to U. S. Industrial Alcohol Company.

Ceramic flux including 68.90% silica, 15.78% alumina, 0.28% titania, 2.54% ferric oxide, 0.10% manganese oxide, 2.80% lime, 1.72% magnesia and 3.28% alkalis. No. 2,207,911. Dana A. Cannon.

Production of photographic color sound films. No. 2,207,916. John Eggert, Gerd Heymer, Kreis Bitterfeld and Werner Schultze to General Aniline and Film Corp.

Apparatus for the clarification and deodorization of milk and cream. No. 2,207,928. Hector M. McDonald.

Method producing gas-purifying composition effective in removing H_2S. No. 2,208,029. Eugene M. Heckman.

Method of and composition for preventing corrosion of metal parts in cooling or heating systems. No. 2,208,101. Josef M. Michel to Walther H. Duisberg.

Pharmaceutical preparation in form of solid solution comprising sugar and compound selected from the compounds acetyl salicylic acid and bromatological salts thereof. No. 2,208,120. William B. Coleman.

Process of treating calcareous materials. No. 2,208,143. Arthur J. Weinig to Riverside Cement Co.

Process for recovering cations from aqueous solutions and effecting regeneration of the cation exchange medium. No. 2,208,171. Oliver M. Urbain to Charles H. Lewis.

Process for recovering anions from aqueous solutions and effecting regeneration of the anion exchange medium. No. 2,208,172. Oliver M. Urbain to Charles H. Lewis.

Process for effecting anion exchange in aqueous liquids. No. 2,208,173. Oliver M. Urbain and William R. Stemen to Charles H. Lewis.

Granular magnesia product. No. 2,208,185. Monson F. Goudge to Canadian Refractories, Ltd.

Pest control composition containing as active ingredient a chelate cupric enolate. No. 2,208,253. Albert L. Flenner, Robert B. Flint and Frank H. Kaufert and Louis Spiegler to E. I. du Pont de Nemours & Co.

Blueprint marking ink composed of coloring component and substantially saturated aqueous solutions consisting of lithium hydroxide and water. No. 2,208,288. Robert H. Cook and Hampton C. Godbe.

Process for production of pulverulent motor fuel for coal-dust motors comprising treating pulverulent solid extracts of coal with oxides of nitrogen in such manner that initial material retains its loose pulverulent condition and nitrogen and oxygen are incorporated with the coal extract. No. 2,208,514. Josef Jannek and William Hennicke to I. G. Farbenindustrie Aktiengesellschaft.

Process subjecting metallic surfaces to action of cleaning emulsion containing petroleum derivative, alkali soap and water, and thereafter applying to metallic surfaces chemical coating composition comprising dilute acid phosphates and oxidizing agents, to produce thereon corrosion-resistant and paint-holding coatings. No. 2,208,524. Van M. Darsey and Harold J. McVey, to Parker Rust-Proof Co.

Quick-drying penetration-type stamp-pad ink. No. 2,208,551. Campbell E. Waters to Govt. U. S. A.

Reissue. Hydrogenated brown camphor oil and method of preparing same. No. 21,511. Marion Scott Carpenter, to Givaudan-Delawanna, Inc.

Dry composition of matter comprising calcined gypsum and solid material of dried distillery slop. No. 2,208,565. Carlisle K. Roos, and Harry N. Huntzicker to United States Gypsum Co.

Process of preparing acidproof water-resistant mortars. No. 2,208,571. Karl Dietz and Karl Frank to Pen-Chlor, Inc.

Plastic adhesive paste comprising coaction product of a resin formed by reaction of H cl, tar, congo gum and urea, said resin being intimately intermixed with ammonium hydroxide, caustic soda, citric acid, casein, borax and water. No. 2,208,580. Eugen Hirsch to E. I. du Pont de Nemours & Co.

Method drying printing inks containing partially polymerized Chinawood oil which have been applied to a surface, comprising exposing freshly printed surface to Sn Cl_4 in vapor form. No. 2,208,587. Eugene Kienle to American Can Co.

A composition for pretreatment in the dyeing of human hair with water soluble non-toxic organic dyes containing negative salt forming groups, said composition comprising an amide of an alkylene polyamine having property of rendering hair receptive to said dyes. No. 2,208,594. John W. Orelup.

Process for reactivating spent massive metal hydrogenation catalysts contaminated with organic materials. No. 2,208,616. Victor E. Wellman and Waldo L. Semon to The B. F. Goodrich Co.

Process for precipitation of colloidal substances from solution thereof. No. 2,208,637. John E. Jones, James Y. Davies and John F. Neilson to Celanese Corp. of America.

Processes recovering solids of excess sprayed coating material. Nos. 2,208,646-647. Seymour G. Saunders and Harry Morrison to Chrysler Corp.

Safety papers. Nos. 2,208,652-653. William Whitehead to Celanese Corp. of America.

Source capable of evolving alkaline earth metals comprising barium oxide and strontium oxide chemically compounded with beryllium oxide. No. 2,208,692. Delos H. Wamsley to Radio Corp. of America.

In process separating coal from indigenous impurities by intermediation of water-insoluble organic parting liquid, process comprising applying to coal-containing solids a compound which will react with a film stabilizer to form water insoluble product, washing solids with water, and applying to solids film stabilizer which will react with said compound to produce water-insoluble precipitate. No. 2,208,758. Willing B. Foulke, and Oswald H. Greager to E. I. du Pont de Nemours & Co.

Embalming composition containing soluble salts of hydrofluosilicic acid. No. 2,208,764. Hilton I. Jones to National Selected Morticians.

Process decreasing permeability of porous ground. No. 2,208,766. Howard C. Lawton to Shell Development Co.

Means for sealing the joints between the members comprising electrolytic cells. No. 2,208,778. Kenneth E. Stuart to Hooker Electrochemical Co.

Heat producing chemical combinations for imparting permanent wave to hair upon addition of an ionizing medium thereto. Nos. 2,208,815-816. Raymond E. Reed to The Kendall Co.

Process for the production and purification of sexual hormone derivatives. No. 2,208,942. Emil Kaiser to Chemical Works of Gedeon Richter, Ltd.

Tooth filling comprising artificial thermo-plastic, organic, water-insoluble resin capable of softening at temperatures of about 50° C. No. 2,208,967. Egon E. Karlsruhe to Chemical Marketing Co., Inc.

Stencil sheets. Nos. 2,208,980-981. Shinjiro Horii.

Absorbent material comprising activated carbon incorporated with mineral structure of bone, said carbon being capable of separation from said mineral structure of bone by agitation with water. No. 2,209,069. Francis A. Bodenheim and Clarence E. Heath to Applied Sugar Labs., Inc.

Production of photographic diazotype prints. No. 2,209,087. Werner P. Leuch to Eugene Dietzgen Co.

Plant pest control composition containing as essential ingredients soluble alkali metal heavy metal salt of a polyphosphoric acid. No. 2,209,129. Hans Mengele and Hans Huber.

Siliceous product and method of making same. No. 2,209,163. George Kaloustian to Cobrecite Corp.

Process for the preparation of oil solutions of organic sulfonates No. 2,209,169. Louis A. Mikeska and George E. Serniuk to Standard Oil Development Co.

Siliceous products and method of making same. No. 2,209,170. Howard S. Nevin and George Kaloustian to Cobrecite Corp.

Parasiticide derived from terpenes. No. 2,209,184. Joseph N. Borglin to Hercules Powder Co.

Manufacture of hydrocarbon products by hydrogenation of carbon oxides. No. 2,209,190. William E. Currie to Standard-I. G. Co.

Method of consolidating sugar refining with the manufacture of milk chocolate condensed milk, and other products. No. 2,209,202. William D. Horne.

A match comprising incombustible stick; head consisting of coating of incompletely charred cotton fibers mixed with relatively low percentage of combustion-promoting substance; and ignition tip for said head. No. 2,209,237. Joseph Simon, George Foster and Adam J. Manxi to Arrow Match Corp.

Manufacture of antineuritically active products. No. 2,209,244. Hans Andersag and Kurt Westphal to Winthrop Chem Co., Inc.

Rust removing composition, comprising phosphoric acid, zinc phosphate, gum arabic, manganese chloride, butyl propionate and water. No. 2,209,291. George Witty to Frederick Le Pan.

Abrasive grit wetted with a solvent for an aminotrazine-aldehyde resin and bonded with resin containing an aminotrazine-aldehyde condensation product. No. 2,209,292. John H. Berger to American Cyanamid Co.

Composition for increasing the thermal emissivity of a surface and its combination with a surface. No. 2,209,304. William F. Alder, to Jenness A. Alder.

Method refining a condensed milk product. No. 2,209,328. Julius F. Dietrich and Richard H. Dietrich. Said Richard H. Dietrich to Julius F. Dietrich.

Process for sterilization of liquids. No. 2,209,345. Wincenty Matzka to The Matzka Corp.

Potash cartridge for oxygen respirators and lifesaving apparatus. No. 2,209,354. Heinz Schmidt and Jans Jezek to Spolek Pro Chemickou A Hutni Vyrobu.

Composition of matter comprising 100 parts lower fatty acid ester of cellulose containing at least 8% propionyl or butyryl groups and not more than 3 free hydroxyls per 24 C. atoms in cellulose unit, and 5-40 parts of plasticizer at least one-half of which consists of dibutyl sebacate. No. 2,209,357. Henry B. Smith to Eastman Kodak Co.

Apparatus for the manufacture of hollow and indented dry pressed ceramic ware. No. 2,209,404. Benjamin Lassman to Hydraulics, Inc.

Manufacture voluminous product from raw materials containing calcium and magnesium carbonates, such as dolomite. No. 2,209,444. George deBecze.

Method and agent for breaking water-in-oil emulsions. No. 2,209,445. Boris S. deMering to Standard Oil Development Co.

Elastic porous adhesive material capable of deadening sound vibrations. No. 2,209,451. Harvey D. Geyer to General Motors Corp.

Non-caustic, non-toxic germicide mixture for solution in water comprising $FeSO_4$ and $Fe_2(SO_4)_3$ in ratio of one molecular weight each. No. 2,209,454. Howard L. Guest.

Improved process for producing wax modifying agents by condensation of chlorinated waxy hydrocarbons. No. 2,209,462. Eugene Lieber and Martin M. Sadlon to Standard Oil Development Co.

U. S. Chemical Patents
Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 209

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 210

Petroleum wax composition containing as color stabilizing agent a minor quantity of substance of class of alkyl hydroxy phenyl sulfides in which sulfur is directly connected to a C atom of phenyl ring. No. 2,209,463. Eugene Lieber and Louis A. Mikeska to Standard Oil Development Co.

Corrosion inhibited lubricating oil adapted for use in preserve of hard metal alloy bearings having corrosive susceptibility of alloys of class consisting of cadmium-silver, cadmium-nickel and copper-lead alloys. No. 2,209,464. Clarence M. Loane and Bernard H. Shoemaker to Standard Oil Co., Chicago.

Process for preparing catalysts. No. 2,209,492. William E. Spicer to Standard-I. G. Co.

Steering gear lubricant grease having total soap content within range (2-14%). No. 2,209,500. John C. Zimmer and Arnold J. Morway to Standard Oil Development Co.

Method for production of artificially cultured buttermilk. No. 2,209,516. Harold S. Fielder and Latour O. Ott, to Cherry-Burrell Corp.

Base material coated with solution containing both photo sensitive iron salts which react to form a blue upon exposure to light and development with water, and a sugar forming from 5-20% of the solid content of the solution. No. 2,209,548. Donald E. Whitlock and John F. Fienast to Keuffel & Esser Co.

Drilling fluid having low formation penetration and low gas-cutting tendencies comprising suspension of heavy solids in water, starch to impart formation sealing properties and a modicum of aliphatic alcohol. No. 2,209,591. Charles D. Barnes to Union Oil Co. of Calif.

Glazing ceramic ware. No. 2,209,624. Benjamin A. Jeffery to Champion Spark Plug Co.

Detergent and emulsifying agent. No. 2,209,634. Fred Weaver Muncie to Colgate-Palmolive-Peet Co.

Method of and apparatus for treating cement and similar materials. No. 2,209,636. Franz Schubert to G. Polysius Aktiengesellschaft.

Method of preventing the formation of gumlike products in oils. No. 2,209,646. Alfred C. Glyn.

Method of manufacturing molded bodies. No. 2,209,679. Albert A. Fowler and Russell M. Otis.

Recovery of solids from buttermilk. No. 2,209,694. Charles G. Harford to Arthur D. Little, Inc.

Method of preserving coated abrasives. Nos. 2,209,715-716. Frank J. Crupi to Behr-Manning Corp.

Japanese beetle insecticide consisting of rosin, sodium hydroxide, fish oil soap, water, corrosive sublimate and nicotine sulfate. No. 2,209,744. Charles J. Austin.

Determination of percentage of alcohol in water-alcohol solutions. No. 2,209,764. Franklin Cassen and Harold D. Mulloy.

Germicide. No. 2,209,769. William H. Engels and John Weijlard to Merck & Co., Inc.

Cleaning fluid consisting of petroleum solvent, sulfonated oil, and oleic acid. No. 2,209,785. Cyrus E. Manierre.

Weed killing composition containing as active constituent the product of reacting a petroleum fraction or distillate with a mercuric salt. No. 2,209,905. Anderson W. Ralston and Robert J. Vander Wal to Armour & Co.

Light sensitive coated paper containing small amount of ester of sulfosuccinic acid and light sensitive blueprint coating. No. 2,209,917. Garnet Philip Ham and Robert B. Barnes to American Cyanamid Co.

Process for the manufacture of upholstering material. No. 2,209,919. Conrad Herrmann to North American Rayon Corp.

Method treating green wood to prevent growth of decay organisms. No. 2,209,970. Harold R. Hay to Monsanto Chem. Co., St. Louis.

Treatment of ethyl chloride catalyst. No. 2,209,981. Alex C. Keyl and Robert D. Blue to The Dow Chemical Co.

Astringent perspiration-inhibiting compositions. No. 2,210,013-014. W. Kedzie Teller to The Pharma-Craft Corp.

Composition for greasing baking pans and the like. No. 2,210,043. Samuel Scherr.

Dry base for adhesive suitable for use in envelope machines and the like. No. 2,210,119. Earle R. Edson and George F. Mach to Russia Cement Co.

In preparing fresh fruits and vegetables for market, steps of subjecting same to action of alkaline solution comprising aqueous medium containing alkaline hypochlorite in amount sufficient to impart content of .3-1.5% of available chlorine and also containing member of group consisting of sodium and potassium acetate citrate, tartrate, and borax, said solution having pH about 7.5-9.5. No. 2,210,133. Jagan N. Sharma to Food Machinery Corp.

Binding compound derived from hardwood tar. No. 2,210,212. Jean Levesque to The Province of Quebec, Department of Colonization.

Glass batch ingredient comprising mixture of pyrophyllite and feldspar. No. 2,210,254. Charles H. Peddrick, Jr., to Feldspathic Research Corp.

Acetylated oil and method of making same. No. 2,210,305. Alfred E. Rheineck to Devoe & Raynolds Co., Inc.

Perfumes containing a ketal derived from a pyrocatechol. No. 2,210,311. Albert Weissenborn to Winthrop Chem. Co., Inc.

Method bonding without burning materials containing non-hydrating calcium silicate. No. 2,210,326. Norman P. Pitt and Ernest G. Baker to Canadian Refractories, Ltd.

Cement or mortar composition for laying up refractory brick. No. 2,210,327. Norman P. Pitt and Wilfred G. Rockcliffe to Canadian Refractories, Ltd.

Method producing binding agent. No. 2,210,367. Karl Halbach.

Parasiticidal oil spray comprising petroleum oil and oil soluble sulfonated naphthenic acid. No. 2,210,420. Frank F. Lindstaedt.

Composition of matter comprising halogen-containing, film-forming hydrocarbon selected from groups consisting of chlorinated rubber and polyvinylchloride, and as softener the aromatic and highly carburetted unsaturated hydrocarbons of high B.P. obtained from petroleum by the Edeleanu process. No. 2,210,434. Leo Rosenthal and Wilhelm Becker to I. G. Farbenindustrie Aktiengesellschaft.

Capillary active compounds and process of preparing them. No. 2,210,442. Gerhard Balle Johann Rosenbach and Georg Dittus to I. G. Farbenindustrie Aktiengesellschaft.

Products obtained from the juices of the agave plant and process of recovering the same. No. 2,210,463. Gustav J. Nord.

Aqueous dispersion of hardened protein. No. 2,210,481. George H. Brother and Allan K. Smith to Henry A. Wallace, Sec. of Agriculture and successors.

Process of sealing openings in the earth by use of potentially hardenable substance. No. 2,210,545. Andrew C. Hamilton, Jr., to United States Gypsum Co.

Process of purifying edible oils and fats and removing colloidal or dissolved metals. No. 2,210,548. Jakob L. Jakobsen to General Mills, Inc.

Thin, colored fishkin. No. 2,210,581. Edward Coerk.

Carburizing compound in form of manufactured pellets. No. 2,210,622. Alvin R. Keil.

Insulating material—mica flakes, ethyl cellulose, chlorinated diphenyl and shellac. No. 2,210,704. Arthur L. Brown and Lawrence R. Hill to Westinghouse Electric & Mfg. Co.

Acid treated, impingement carbon black carrying water soluble acid. No. 2,210,763. Robert J. King and William Mitchell, Jr., to King & Lang, Inc.

Process coloring wood by subjection to ammonia gas. No. 2,210,832. Frank G. Bright to The Singer Mfg. Co.

Insecticidal spray. No. 2,210,900. Gerald H. Coleman to The Dow Chemical Co.

Process producing water-buoyant milled soap. No. 2,210,924. Ben. B. Hood to Lever Bros. Co.

Insecticidal composition adapted to be employed as spray or dust comprising a dinitro-phenol and sufficient buffering agent to maintain pH value below 5 in aqueous dispersions. No. 2,210,929. Sheldon B. Heath and Merlin O. Keller to The Dow Chemical Co.

Insecticidal dusting composition. No. 2,210,945. Lindley E. Mills to The Dow Chemical Co.

Water-miscible parasiticide concentrate comprising solution of partially neutralized sulfonated sperm oil in a liquid cholor-hydrocarbon. No. 2,210,964. Eric P. Tuennermann to The Dow Chemical Co.

Process removing fluorides from water comprises contacting with base exchange material that has been treated with highly concentrated aluminum salt solution. No. 2,210,965. Oliver M. Urbain and William R. Stemen to Charles H. Lewis.

Process removing fluorides from water comprises contacting with sorptive materials that have been treated with highly concentrated aluminum salt solution. No. 2,210,966. Oliver M. Urbain and William R. Stemen to Charles H. Lewis.

Production metallic soap comprising saponifying hydroxylated fish oil with alkaline agent. No. 2,211,139. Francis J. Licata to National Oil Products Co.

Lubricating oil composition containing alkyl ester of an aromatic stearic acid. No. 2,211,163. Herman E. Ries, Jr., to Sinclair Refining Co.

Manufacture of catalysts. No. 2,211,207-8. Vladimir N. Ipatieff and Louis Schmerling to Universal Oil Prods. Co.

Dry powdered stabilizer for dairy products and the like comprising mixture of Irish moss and glyceryl mono stearate. No. 2,211,209. Edward C. Johnston to Robert A. Johnston Co.

Reactivation of mass of porous catalyst, activity of which has been reduced by deposition of carbonaceous material. No. 2,211,211. Louis S. Kassel to Universal Oil Prods. Co.

Soluble cutting oil and method of preparing the same. No. 2,211,250. Paul T. Anderson and Harry L. Moir to The Pure Oil Co.

Electroplating process comprises plating from bath which contains in solution a soluble stannite and hydrophilic polyvinyl compound selected from group consisting of polyvinyl alcohol, polyvinyl esters, polyvinyl ethers, and polyvinyl acetals. No. 2,211,252. Albert T. Bremser to Bendix Aviation Corp.

Vinyl acetal resin photographic coating. No. 2,211,323. Charles R. Fordyce to Eastman Kodak Co.

Method preparing fur for felting comprising applying solution of mercury nitrate containing excess of nitric acid, hydrogen peroxide and substance selected from groups consisting of ammonium persulfate, sodium perchlorate, ammonium perchlorate, and perchloric acid. No. 2,211,341. Warren C. Mercier to American Hatters and Furriers Co., Inc.

Method preparing fur for felting comprising applying solution of mercury nitrate containing excess of nitric acid, hydrogen peroxide and perchloric acid. No. 2,211,342. Warren C. Mercier to American Hatters and Furriers Co., Inc.

Retarder composition for cement mixture. No. 2,211,368. Charles H. Dickens.

Dentifrice base comprising finely divided insoluble magnesium pyrophosphate. No. 2,211,369. Charles B. Durgin to Monsanto Chemical Co.

Stabilized zinc dust lubricant. No. 2,211,373. Bert Folda, Jr., to Socony-Vacuum Oil Co., Inc.

Method enhancing natural varietal color of fruit by treatment with soap-like reagent. No. 2,211,390. Fletcher Schaum to Fletcher Worka.

Lacquer composition containing a solution of chlorine-containing rubber. No. 2,211,431. Arloe R. Olsen to Hercules Powder Co.

Method preparing synthetic composition for blending with lubricant comprises subjecting rubber material to action of anhydrous Al Cl_3 in presence of metallic Fe under conditions effective to produce conversion products. No. 2,211,442. Erich M. Steffen, ¾ to Tide Water Associated Oil Co.

Utilization of volatile fluxex in welding operations. No. 2,211,448. Thomas H. Vaughn and Arthur R. Lytle to Union Carbide and Carbon Research Labs., Inc.

Method decolorizing oil comprising percolating through mass of calcined alunite substantially free from soluble salts of sodium and potassium. No. 2,211,489. Ernest C. Bierce.

Lubricating oil and method of lubricating bearings therewith. No. 2,211,558. Philip G. Colin and Arthur W. Lewis to Tide Water Associated Oil Co.

Process electrolytically coating non-conductive materials. No. 2,211,582. Samuel Ruben.

Method weatherproofing articles containing calcium sulfate. No. 2,211,593. Henry S. Colton and Mahlon J. Rentschler to said H. S. Colton, said M. J. Rentschler, and J. A. Weeks, as trustees.

Polychloroprene electrical insulation. No. 2,211,608. Moyer M. Safford to General Electric Co.

Coal Tar Chemicals

Process of producing naphthalene in the form of aggregates of individual crystals. No. 2,207,752. Stuart Parmalee Miller to The Barrett Co.

A resinous dicarboxylic acid anhydride having formula $C_{24}H_{34}O_3$ and M. W. of 370, and having property of combining chemically with glycols to form esters which undergo a sol-gel transition and form infusible polymers upon extended heating between 200-250° C. No. 2,208,321. Theodore F. Bradley to American Cyanamid Co.

Process for producing oxycarboxylic acid esters. No. 2,208,355. Ludwig Beer and Paul Halbig to Consortium Fur Elektrochemische Industrie, G.m.b.H.

Process for the manufacture of di-substituted carbamic acid esters of phenols containing a basic substituent. No. 2,208,485. John A. Aeschlimann to Hoffmann-La Roche, Inc.

A benzanthrone carboxylic acid. No. 2,208,624. Willy Braun to General Aniline & Film Corp.

Process for production of dibenzyl sulfanilate. No. 2,208,678. Eugene A. Markush, John J. Malawists and Julius Miller to Pharma Chemical Corp.

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 211

Process treating tar oils to render them suitable for use as motor fuels. No. 2,209,123. Herbert Koelbel.

Diethylcarbamates of resorcinol-mono-alkyl ethers and a process of preparing them. No. 2,209,245. Erich Bartholomaus to Winthrop Chem Co., Inc.

Process producing coke from carbonizable material. No. 2,209,255. Arthur Hoijord Andersen and Joseph Emile Renaud to Shawinigan Chemicals, Ltd.

Manufacture of hydrocarbon gases from coal. No. 2,210,117. Henry Dreyfus.

Method of treating cracking still residues. No. 2,210,395. William H. Carmody to The Neville Co.

Process for the preparation of aryl-aminoanthraquinone compounds. No. 2,210,517. Richard S. Wilder to National Aniline & Chem. Co., Inc.

Process of preparing cyclic carboxylic acids substituted in the nucleus. No. 2,210,874. Gerhard Balle and Heinz Schild to General Aniline & Film Corp.

Coatings

In making a laminated sheet, method of coating paper sheet with solvent containing varnish, drying and expelling solvent, heating paper to render coating adhesive and then applying rubber hydroxide sheet by means of pressure. No. 2,208,060. Melvin Wagner to The Liquid Carbonic Corp.

Coating composition resistant to weathering in thin film condition containing vegetable drying oil and a thiodiphenylamine. No. 2,209,088. George D. Martin to Monsanto Chem. Co., St. Louis.

Method of coating and decorating metals. No. 2,209,530. Martin W. Mason to Pittsburgh Plate Glass Co.

Acid-resisting enamel, especially suitable for application to sheet metal surfaces. No. 2,209,585. Ludwig Stuckert to Deutsche Gold und Siber-Scheide-Anstalt.

Liquid coating for gas filtering mediums comprising permanently viscous mixture of chlorphenyl chlorbenzoates. No. 2,211,468. William J. Marsh to Hooker Electrochemical Co.

Dyes, Stains, Etc.

A glaze for decorating ceramic surfaces. No. 2,207,723. Alden J. Deyrup to E. I. du Pont.

Metalliferous azo dyestuffs. No. 2,207,859. Joseph Gyr to Society of Chemical Industry in Basle.

Heptamethine dyestuffs. No. 2,207,915. Walter Dieterle and Oskar Riester to General Aniline and Film Corp.

Process for manufacture metalliferous azo dyestuffs. No. 2,208,170. Fritz Straub and Peter Pieth to Society of Chemical Industry in Basle.

Monoazo dyestuffs being insoluble in water, but very easily soluble in organic solvents and yielding red to blue shades of good properties of fastness. No. 2,208,363. Ernst Fischer to General Aniline & Film Corp.

Monoazo dyestuffs insoluble in water but very easily soluble in organic solvents and yielding red to blue shades of good properties of fastness. No. 2,208,925. Ernst Fischer to General Aniline & Film Corp.

Process of producing fast dyeings and the dyed fiber obtained thereby. No. 2,208,932. Georg Kranzlein, Werner Kirst and Carl J. Muller to General Aniline & Film Corp.

Process improving fastness to light of dyeings obtained on animalized fibrous textile materials by means of wool dyestuffs comprises incorporating in these materials a polyhalogen-polyhydroxy-triphenyl methane sulfuric acid. No. 2,209,251. Hanns Rein, to I. G. Farbenindustrie Aktiengesellschaft.

Water-insoluble azo dyestuffs yielding red to orange shades of good fastness to light and weather. No. 2,209,749. Gerhard Schrader and Otto Bayer to General Aniline & Film Corp.

Oil soluble acylated dye. No. 2,209,902. Anderson W. Ralston and Robert J. Vander Wal, to Armour & Co.

Vat dyestuffs and method of producing them. No. 2,210,041. Rudolf Robl to General Aniline & Film Corp.

Monoazo dyestuffs insoluble in water but very easily soluble in organic solvents and yielding orange to violet shades of good fastness. No. 2,210,072. Ernst Fischer to General Aniline & Film Corp.

Process for the manufacture of azo dyestuffs. No. 2,210,364. Friedrich Felix and Werner Zuercher to Society of Chemical Industry in Basle.

Vat dye composition comprising vat dye compound and soluble organic ester of organic poly-carboxylic acid. No. 2,211,126. Jean G. Kern to National Aniline & Film Corp.

Process producing azo dyestuffs on mixtures consisting of wool and regenerated cellulose. No. 2,211,149. Heinrich Morschel, Ludwig Nussler, Hans Krzikalla and Wolfgang Alt to General Aniline & Film Corp.

Azo compounds and materials colored therewith. No. 2,211,339. James G. McNally and Joseph B. Dickey to Eastman Kodak Co.

Nonamethine dyes. No. 2,211,408. Walter Dietrele and Oskar Riester to General Aniline & Film Corp.

Equipment and Apparatus

Apparatus for making extractions from organic substances. No. 2,207,828. Lewis J. Schwanke.

Pressure regulating system. No. 2,207,941. Carl A. Otto to Johnson Service Co.

Periodical absorption refrigerating plant. No. 2,207,950. Sverre J. Steensen.

System for waste heat recovery. No. 2,208,157. Fritz P. Grutzner to Fairbanks, Morse & Co.

Thermocouple well assembly. No. 2,208,332. David B. Rossheim to The M. W. Kellogg Co.

Device for compensating and regulating pressure of gases produced by electrolytic water decomposer. No. 2,208,352. Alarich von Pichler-Tennenberg to Siemens & Halske, Aktiengesellschaft.

Pressure reducing, filtering, and condensing tower. No. 2,208,465. Jose Guadalupe.

Gas and oil separator. No. 2,208,466. Jose Guadalupe.

Process and apparatus for fractional distillation. No. 2,208,573. Merrell R. Fenske, to the Penn. Research Corp.

Device for purifying, cooling, and mixing gases. No. 2,208,743. Max Aurig.

Device for indicating quantity of calcium carbide contained in a revolving screen of an acetylene generator. No. 2,208,867. Hermann Holler and Otto Mues to I. G. Farbenindustrie Aktiengesellschaft.

Stopper for carboys, bottles, cans and like containers. No. 2,208,899. William S. Freeman.

Apparatus for bending vitreous tubing. No. 2,208,958. Carl A. Brown, and Frank B. VanSickle to General Electric Co.

Refining apparatus for metals. No. 2,209,153. Paul W. Dillon to Northwestern Steel and Wire Co.

High-pressure, corrosion-resistant vessel. No. 2,209,290. George W. Watts to Standard Oil Co. (Chicago).

Method controlling operation of zeolite water softener comprises controlling operation of the softener in accordance with pH determination of effluent. No. 2,209,487. Richard E. Wagner.

Apparatus for subjective examination of blood. No. 2,209,543. Leendert Schalm and Jan F. Schouten to Carl Zeiss.

Soft pliable rubber container for corrosive liquids. No. 2,209,570. Herman T. Kraft to The General Tire & Rubber Co.

Fractionating tower. No. 2,209,675. Dan L. Dodds.

Electrostatic fractionator for fractionating oil. No. 2.209,798. Philip Subkow to Union Oil Co. of Calif.

Apparatus for washing, desulfurizing, bleaching, dyeing and subjecting artificial yarn to finishing treatments. No. 2,209,950. Alfredo Nai to Chatillon.

Process and apparatus for treatment of fluids. No. 2,209,973. Eugene J. Houdry, Raymond C. Lassiat, and George Kelso to Houdry Process Corp.

Method and apparatus for drying printing ink. No. 2,210,032. Frederic O. Hess to Interchemical Corp.

Water purifying and degasifying apparatus. No. 2,210,151. Victor A. Rohlin to Cochrane Corp.

A fume tube assembly in a digestion apparatus. No. 2,210,176. Alexander I. Newman to Precision Scientific Co.

Large surface filter for all fluids. No. 2,210,397. Daniel Dreiss.

Mechanism for governing a switch for controlling temperatures in temperature-governed chambers. No. 2,210,526. Herbert S. Burling.

Process and apparatus for filtering alcoholic beverages, food products, and like liquids. No. 2,210,719. Squire C. Hodges to S. F. Bowser & Co., Inc.

A heating element for oil reclaiming apparatus. No. 2,210,906. Burdick R. Ells to Harry F. Langlois and Herbert N. Langlois.

Vacuum distillation process. No. 2,210,926. Kenneth C. D. Hickman to Distillation Products, Inc.

Vacuum distillation processes. No. 2,210,927-928. Kenneth C. D. Hickman to Distillation Products, Inc.

Pump for liquefying gases. No. 2,211,029. Claud L. Robinson.

In centrifugal machine for removing precipitated wax from hydrocarbon oils, a transparent tube for visibly confining oil withdrawn from rundown line, means for returning said portion of oil to rundown line, and means disposed intermediate the transparent tube and said returning means for bringing said portion of oil to rest within transparent tube. No. 2,211,098. William Blewett Chenault to Sinclair Refining Co.

Continuous fluid material congealing apparatus. No. 2,211,387. Almond C. Routh.

Combined shipping container and gas generator. No. 2,211,430. Charles Ness to Union Carbide and Carbon Corp.

A fluid pressure control. No. 2,211,483. Ransom Tyler to Oilgear Co.

Process and apparatus for simultaneously drying and conveying tubular products. No. 2,211,490. Emil Braun to Naturin-Werk Becker & Co.

Method and apparatus for treatment of sewage. No. 2,211,565. Charles G. Hawley, Hope Hawley Degenhardt and Virginia T. Hawley, executrices of Charles G. Hawley, deceased to Virginia T. Hawley.

Liquid level indicator. No. 2,211,606. William H. Pratt to General Electric Co.

Explosives

Single hole die for smokeless powder presses, said die consisting of Monel metal. No. 2,210,011. Charles W. Steffen to Hercules Powder Co.

In method preparing dense colloidal smokeless powder step of pressing hard and tough nitrocellulose colloid through forming die comprising 85-86% Fe, 13-14% cr., .2-.4% C, and .3-.5% mn. No. 2,210,104. Harry C. Sweney to Hercules Powder Co.

In preparation dense colloidal smokeless powder, step of pressing hard and tough nitrocellulose colloid through forming dye consisting of nickel. No. 2,210,105. Ernest M. Symmes to Hercules Powder Co.

Process for the manufacture of smokeless powder. No. 2,210,871. Floyd L. Boddicker to Hercules Powder Co.

Fine Chemicals

Improved process for preparation of phenol sulfide. No. 2,207,719. Charles A. Cohen, Elizabeth and Louis A. Mikeska to Standard Oil Company of Delaware.

Nitro-tertiary-alkyl-phenols. No. 2,207,727. Cecil M. Galloway to Dow Chemical Co.

Production of d-altronic acid and its salt from sedoheptulose. No. 2,207,738. Claude S. Hudson, Nelson K. Richtmyer and Raymond M. Hann to Government of U. S.

A Di-alkyl-phenol having the formula R_2OH, wherein each R represents an alkyl group containing at least 2 carbon atoms. No. 2,207,753. Clarence L. Moyle, Edward M. Van Duzee to The Dow Chemical Co.

Process for making 2-chloro-1,3-butadiene. No. 2,207,784. Albert S. Carter to E. I. du Pont.

Manufacture of sulfur nitride. No. 2,207,791. Willis C. Fernelius.

Compounds derived from dehydroabietic acid. No. 2,207,890. Edwin R. Littmann to Hercules Powder Company.

Method of making halohydrin ethers. No. 2,207,983. Charles G. Harford to Arthur D. Little, Inc.

Purification of alkyl sulfates and resulting products. No. 2,207,989. Kenneth E. Long to Harshaw Chemical Company.

Composite barbituric-acid derivative suitable for oral and parenteral administration comprising sodium isoamyl ethyl barbiturate and sodium propyl-methyl-carbinyl allyl barbiturate. No. 2,207,990. Charles R. Miller to Eli Lilly & Co.

Preparation of esters of 2-ketoaldonic acids by oxidation of aldonic acids, their lactones and esters. No. 2,207,991. Richard Pasternack and Peter P. Regna to Charles Pfizer & Co.

Test for amino-benzene compounds in body fluids. No. 2,208,096. William B. Fortune to Eli Lilly & Co.

Bis-(Anthraquinoneacridono)pyrenes and process of making them. No. 2,208,190. Walter Kern, to Society of Chemical Industry in Basle.

Preparation of nitriles of acrylic acids comprises heating compound from group consisting of cyanoalkyl esters and cyanoalkyl carbinals in contact with iodine and catalyst at 350°-600° C. No. 2,208,328. Joy G. Lichty to Wingfoot Corp.

Process comprising passing lower aliphatic monohalohydrin selected from group consisting of chloro- and bromohydrins in admixture with

U. S. Chemical Patents
Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 211

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 212

steam over surface catalyst at 250-700° C. No. 2,208,557. James L. Amos and George W. Hooker to The Dow Chem. Co.

Preparation of mixed cellulose esters containing a substantial amount of propionyl or butyryl. No. 2,208,569. Loring W. Blanchard, Jr. to Eastman Kodak Co.

Acyclic monoaminonitrile in which amino and nitrile groups are separated by chain of at least 5 C atoms contiguous therewith and process of producing the same. No. 2,208,598. George W. Rigby to E. I. du Pont de Nemours & Co.

Process heating under pressure equimolecular quantities of sulfanilic acid amide and galactose with small position of glycerol in large excess of ethyl alcohol, evaporating substantial portion of the alcohol until slightly turbid colorless mixture is obtained. No. 2,208,641. Fritz Meyer.

An aldonic acid salt of an anesthetic base. No. 2,208,790. David Curtis.

Methods separating higher alcohols capable of being acylated to esters from mixtures containing the same, characterized by fact that mixture is reacted with a sulfonic carboxylic acid. No. 2,208,808. Franz Gottwalt Fischer to Schering Aktiengesellschaft.

Process for preparing reduction products of etherified estrone. No. 2,208,915. Rezso Weisz to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T., Dr. Kereszty and Dr. Wolf.

Manufacture of trimethylene trinitramine (hexogen). No. 2,208,934. Josef Meissner.

Preparation of hexamethylene ammonium hexamethylene dithiocarbamate. No. 2,208,935. Arthur M. Neil and Bernard M. Sturgis to E. I. du Pont de Nemours & Co.

A hydroxy mercury compound of reaction product of allyl-carbamide and succinic anhydride. No. 2,208,941. Erno Geiger, Laszlo Vargha and Laszlo Richter to Chemical Works of Gedeon Richter, Ltd.

2-chloroallyl esters of saturated mono-carboxylic acids. No. 2,208,960. Gerald H. Coleman and Bartholdt C. Hadler to The Dow Chemical Co.

Cyclic esters and process of preparing same. No. 2,209,004. Leopold Ruzicka to Society of Chemical Industry in Basle.

Crystallization of aspirin. No. 2,209,019. Harold R. Slagh to The Dow Chem. Co.

Process for cleaving monosaccharides and preparation of lower polyhydric alcohols therefrom. No. 2,209,055. William E. Hanford, to E. I. du Pont de Nemours & Co.

Process of introducing double bonds into organic compounds containing hydroxy groups. No. 2,209,065. Kurt A. F. Pelikan and Erich F. R. Schuelke and John F. Gerkens, to Woburn Degreasing Co.

4-methyl 5-cyanomethyl thiazole. No. 2,209,092. Joseph Pierotti and Oscar C. Johnson. Johnson to Pierotti.

Process for the preparation of beryllium compounds. No. 2,209,131. Remo Szyia Opatowski 80% to Gesellschaft zur Verwertung chemisch-technischer Verfahren A. C.

p-nitrobenzene sulfonamido tetrazoles. No. 2,209,243. Philip S. Winnek to American Cyanamid Co.

Glutathione compounds and a method of making the same. No. 2,209,299. Walter Schoeller and Hans Goebel to Schering Corp.

Process of preparing ammonium mandelate. No. 2,209,314. Joseph S. Baker to E. R. Squibb & Son.

Method recovering coumarone and indene substances from metallic sulfonates of coumarone and indene. No. 2,209,322. Frank W. Corkery to Pennsylvania Industrial Chemical Corp.

Production 2,2-dimethylbutane in substantially free state from mixture of isobutane and ethylene. No. 2,209,450. Frederick E. Frey and Harold J. Hepp to Phillips Petroleum Co.

Process halogenating diketene in the cold, reacting resulting product with water and recovering monohalogenated acetone thus produced. No. 2,209,683. Albert B. Boese, Jr., to Carbide & Carbon Chemicals Corp.

Oil soluble esters of phenyl-thioarsonites. No. 2,209,876. Arthur J. Ewins and George Newbery to May & Baker, Ltd.

Process causing compound of group consisting of polyvinyl-methyl-ketone and inter-polymerization products of vinylmethyl-ketone with other vinyl compounds to act upon compound of group consisting of organic acids and salts thereof in presence of water until polymerization product has completely dissolved. No. 2,209,897. Kurt Billings to I. G. Farbenindustrie Aktiengesellschaft.

Process for preparing alkylated aromatic ether halides. No. 2,209,911. Herman A. Bruson and John W. Eastes to Rohm & Haas Co.

Process for producing 7-dehydrosteroid compounds. No. 2,209,934. Hans R. Rosenberg to E. I. du Pont de Nemours & Co.

Liquid composition of diazotizable arylamine. No. 2,209,985. Herbert A. Lubs to E. I. du Pont de Nemours & Co.

Process simultaneously producing methacrylonitrile and α-chloroisobutyronitrile which comprises treating acetone cyanohydrine with thionyl chloride. No. 2,210,320. Carl T. Kautter and Albert R. Heinz Grafe to Rohm & Haas Co.

Compounds of the etio-cholanic acid series and process of making same. No. 2,210,368. Max Hartmann and Albert Wettstein to Society of Chemical Industry in Basle.

Hexacene compounds. No. 2,210,396. Erich Clar to E. I. du Pont de Nemours & Co.

Process for distillation of hydrogen peroxide from solutions containing persulfate or persulfuric acid. No. 2,210,438. Gustav Adolph and Max E. Bretschger to Buffalo Electro-Chemical Co., Inc.

Process for cooling and drying moist nitrosyl chloride gas. No. 2,210,439. Frank Oscar Agel to The Solvay Process Co.

Method producing esters of unsaturated aliphatic acids. No. 2,210,469. Hanns P. Staudinger to The Distillers Co., Ltd.

Production alkyl halides. No. 2,210,563-64. Leonid Andrussow and Gerhard Stein to General Aniline & Film Corp.

Process of preparing imidazolines. No. 2,210,588. Georg Kranzlein and Herbert Bestian to General Aniline & Film Corp.

Superpolycarbonate. No. 2,210,817. Wesley R. Peterson to E. I. du Pont de Nemours & Co.

Aminomethylene amino-1,3,5-triazines. No. 2,210,831. Louis H. Bock and Alva L. Houk to The Resinous Products & Chem. Co.

Alpha-beta-unsaturated aliphatic amines and process for making them. No. 2,210,837. Daniel Kastner to I. G. Farbenindustrie Aktiengesellschaft.

Reissue: A hydroxide of ethylenediamine. No. 21,528. Frank B. Fisk to Allied Laboratories, Inc.

Oxalkyl derivatives of imidazolines. No. 2,211,001. August Chwala to General Aniline & Film Corp.

Process for thermal conversion of CO with H into organic compounds. No. 2,211,022. Wilhelm Michael and Wolfgang Jaeckh to William E. Currie.

Method of extracting aliphatic acids from aqueous solutions. No. 2,211,087. Max Weimann to Chemical Marketing Co., Inc.

Substituted alpha-amino-acrylic acid nitriles. No. 2,211,152. Otto Nicodemus, Heinrich Lange and Herbert Kranz to General Aniline & Film Corp.

Synthesis of succinonitrile. No. 2,211,240. Alexander Douglas Maculum to E. I. du Pont de Nemours & Co.

Pyrazolone derivatives. No. 2,211,293. Max Schmid to Society of Chemical Industry in Basle.

Pyrazolones and process of preparing same. No. 2,211,294. Max Schmid to Society of Chemical Industry in Basle.

Method preparing chromium oxide catalyst. No. 2,211,302. John Turkevich and Robert F. Ruthruff to Process Management Co., Inc.

Preparation of a dicarboxylic acid ester of agar. No. 2,211,338. Carl J. Malm and John Emerson to Eastman Kodak Co.

Method of isolating and purifying the lactogenic hormone. No. 2,211,411. Everett I. Evans.

Manufacture brominated phthalic acid. No. 2,211,465. Paul W. Jewel and John R. Pratt to Max Factor & Co.

Halo-phenylbenzoates and process for producing same. No. 2,211,467. Richard H. Kimball and Anthony Loverde to Hooker Electrochemical Co.

Effervescent acetyl salicylic acid compositions. No. 2,211,485. Frederick J. Zimmerman.

Production divinylated aromatic hydrocarbons. No. 2,211,524. Herbert M. Stanley, Tadworth, Gregoire M. Epsom, and James E. Youell.

Decomposition of nitrosyl chloride. No. 2,211,531. Herman A. Beekhuis, Jr., to Solvay Process Co.

Synthesis of quinoline derivatives. No. 2,211,538. Francis D. Dodge to Dodge & Olcott Co.

Industrial Chemicals

Nonlumping calcium sulfate containing composition. No. 2,207,737. Franciscus V. Hooft and Hugh B. Hodge, Jr., to Lucidol Corp.

Preparation of butadiene by passing a dichlorinated normal butane into bath of molten metal chlorides at 400 to 600°. No. 2,207,760. Charles R. Russell to The Dow Chemical Co.

Fermentative process for the production of sorbose. No. 2,207,768. John Weijlard, William H. Engels and Christian V. Holland to Merck & Co., Inc.

Process for removing dissolved copper from chloroprene. No. 2,207,901. Norman C. Somers and Lowry S. Danser to E. I. du Pont.

Production of sodium cyanate. No. 2,208,033. Hermann Theodor Josef Konig to Stikstofbindings-industrie.

Process for producing a metal nitrate and chlorine from nitric acid and a metal chloride. No. 2,208,112. Herman A. Beekhuis, Jr., to The Solvay Process Co.

Manufacture of ethylene from hydrocarbons of higher molecular weight by a cyclic regenerative process. No. 2,208,123. John Moyle Duncan to The Solvay Process Co.

Apparatus for the manufacture of lead oxide. No. 2,208,146. Daniel Doyen to Prest-O-Lite Battery Co., Inc.

Method producing sodium sulfate and HCl of high strength. No. 2,208,175. William S. Wilson to Monsanto Chem. Co.

Method reducing sulfur dioxide in a multi-stage exothermic reducing reaction. No. 2,208,247. Bernard M. Carter to General Chem. Co.

Process isolating vinyl methyl ketone from aqueous solution thereof. No. 2,208,296. Heinrich Lange and Otto Horn to I. G. Farbenindustrie Aktiengesellschaft.

In method pyrolyzing benzene hydrocarbons, improvement consisting in preventing or reducing formation of carbon by heating benzene hydrocarbon vapors at a diaryl-forming temperature in an apparatus of iron or carbon steel having carbide coating thereon. No. 2,208,517. Carl F. Prutton to The Dow Chem. Co.

Process for the production of surface-active sulfonates. No. 2,208,581. Johan Marius Hoeffelman to Shell Development Co.

Method obtaining methane of constant purity from methane containing impurities of lower vapor pressure by fractional distillation. No. 2,208,661. Carl J. Christensen to Bell Telephone Co.

Process for continuous esterification. Nos. 2,208,769-770. Thomas J. McKeon, Cyrus Pyle, 3rd and Russell T. VanNess to E. I. du Pont de Nemours & Co.

Device for subdividing fused calcium carbide. No. 2,208,919. Ernst Winter, Franz Luckerath, Hermulheim Kreis and Paul Windelband, deceased by Hedi Windelband, administratrix to I. G. Farbenindustrie Aktiengesellschaft.

In preparation methyl chloroform, step of introducing H cl into mixture of 1,1- dichlorethylene and a hydrochlorination catalyst. No. 2,209,000. Howard S. Nutting and Myron E. Huscher to The Dow Chem. Co.

Phenol recovery process. No. 2,209,150. Alva C. Byrns to Richfield Oil Corp.

Production of butadiene comprising dehydrogenating normal butane. No. 2,209,215. Peter J. Wiezevich and Raphael Rosen, said Wiezevich now Peter J. Gaylor to Standard Oil Development Co.

Process for production of sulfur from sulfide of iron-containing-material. No. 2,209,331. Ture R. Haglund.

Improvement in separation of mono-olefins from materials less reactive with cuprous halides. No. 2,209,452. Edwin R. Gilliland to Standard Oil Development Co.

Process for refining rosin and solvent therefor. No. 2,209,545. Edward M. Toby, Jr., to American Mineral Spirits Co.

Process for decomposition of organic matter. No. 2,209,613. George H. Roeder to Bio Reduction Corp.

Method producing substantially pure chlorine and recovering ammonia in good yield by electrotypes of ammonium chloride solutions. No. 2,209,681. Vaman R. Kokatnur and Oliver S. Plantinga to Autoxygen, Inc.

One stage process for converting alcohol to ether. No. 2,209,699. Armand Mastrangelo to Crima S. A.

Method continuously polymerizing butadiene in presence of an alkali metal. No. 2,209,746. Georg Ebert, Reinhard Heidebroek and Philipp Orth to Jasco, Inc.

Method of separating the constituents of gaseous mixtures. No. 2,209,748. Joseph L. Schlitt to Air Reduction Co., Inc.

Magnesium carbonate composition. Nos. 2,209,752-755. Samuel A. Abrahams and Rubin Lewon to Plant Rubber & Asbestos Works.

Extraction of phenol from phenolic solutions. No. 2,209,872. Kurt Buchheim and Hellmuth Pflugkto Chemische Fabrik Von Heyden Aktiengesellschaft.

Denatured alcohol containing as denaturing material a cyclic ether of from 3-8 C. atoms said ether containing only carbon, hydrogen, and oxygen in which the oxygen atoms are attached to ring C. atoms. No. 2,209,900. Hamline M. Kvalnes to E. I. du Pont de Nemours & Co.

Process of refining soybean oil. No. 2,209,904. Anderwon W. Ralston and Victor Conquest to Armour & Co.

Contact mass for use in the catalytic vapor phase oxidation of organic compounds. No. 2,209,908. John M. Weiss to Calorider Corp.

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 213

Reissue: Process producing vapor phase chemical reaction in gaseous fluid stream. No. 21,526. William W. Odell.

Catalytic polymerization of olefins. No. 2,210,148. Heinz Indest to William Currie.

Process removing gaseous by-products from readily foaming liquid phase reaction mixtures resulting from neutralization of a sulfuric acid derivative of organic materials with an inorganic salt. No. 2,210,175. Fred Weaver Muncie to Colgate-Palmolive-Peet Co.

Process for the conversion of chlorine dioxide into solid form. No. 2,210,268. Yuan-Chi Tank.

Method reacting an olefin with H_2SO_4 in presence of cupric compound as catalyst to form alkyl ester of H_2SO_4. No. 2,210,316. Robert R. Dreisbach to The Dow Chem. Co.

Calcium sulfite and method for producing same. No. 2,210,405. Gerald Haywood to West Virginia Pulp and Paper Co.

Chlorinating barrel. No. 2,210,457. Edwin P. Jones to Champagne Paper Corp.

Process and apparatus for oxidizing sulfide ores. No. 2,210,479. Leon W. Booton and Roy R. Burns to Tennessee Copper Co.

Process for the recovery and purification of sugar. No. 2,210,514. Alfred M. Thomsen.

An insecticidal grade of precipitated sodium aluminum fluoride. No. 2,210,594. John E. Morrow to Aluminum Co. of America.

Method treating monomeric vinyl aromatic compound to remove color-forming bodies. No. 2,210,639. Sylvia M. Stoesser to The Dow Chem. Co.

Preparation synthetic base exchange silicates. No. 2,210,650. Abraham S. Behrman to International Filter Co.

Acid process for hydrolyzing starch into dextrose. No. 2,210,659. Walter R. Fetzer to Union Starch & Refining Co.

Conversion of compounds of the acetylene series into those of the ethylene series. No. 2,210,828. Albert Auerhahn and Robert Stadler to I. G. Farbenindustrie Aktiengesellschaft.

Process of chlorinating aliphatic acids. No. 2,210,834. Paul Heisel and Albert Hendschel to I. G. Farbenindustrie Aktiengesellschaft.

Method of preventing undesired polymerization of vinyl-methyl ketone. No. 2,210,838. Heinrich Lang and Otto Horn to I. G. Farbenindustrie Aktiengesellschaft.

Method for sulfurizing chemical compounds. No. 2,210,877. Ulric B. Bray to Union Oil Co. of Calif.

Method obtaining free or available magnesium oxide from serpentine. No. 2,210,892. Hellmuth R. Brandenburg.

Sulfonic acids of aromatic compounds. No. 2,210,962. Charles A. Thomas to The Sharples Solvent Corp.

In polymerization of butadienes in aqueous emulsion step of carrying out polymerization in presence of catalytic amounts of an organic base. No. 2,211,032. Rudolf Seidler and Wilhelm Pannwitz to Jasco, Inc.

Process selectively separating cyclopentadiene from mixture containing substantial quantity of other heat polymerizable diene material of similar boiling point. No. 2,211,038. Alger L. Ward to The United Gas Improvement Co.

Fused salt heat transfer medium containing substantial amount of alkaline material selected from group consisting of oxide and hydroxide of alkali metals and alkaline earth metals, and substantial amount of finely divided carbon. No. 2,211,147. Walter Beck to Deutsche Gold und Silber Scheideanstalt vormals Roessler.

Method recovering vanadium compound from phosphoric acid solutions. No. 2,211,119. Arthur W. Hixson and Ralph Miller to The Chemical Foundation, Inc.

Process for recovering maleic anhydride. No. 2,211,160. Elton B. Punnett to National Aniline & Film Corp.

Process recovering inflammable solvent from gaseous mixture consisting of adsorbable inflammable solvent vapor component and a non-adsorbable gas component. No. 2,211,162. Arthur B. Ray and Leonard A. Logan to Carbide and Carbon Chemicals Corp.

Method for preparation of alkali metal peroxide. No. 2,211,235. Albrecht Krell and Ewald Herzog to Deutsche Gold und Silber Scheideanstalt.

Water-soluble nitrogenous compounds and a process for their manufacture. No. 2,211,280. Henry Martin and Hans Heinrich Zaeslin to J. R. Geigy A. G.

Process preparing ester condensation products comprising reacting saturated ester with furfuraldehyde in presence of sodium hydride. No. 2,211,419. Virgil L. Hansley to E. I. du Pont de Nemours & Co.

Process of treating monocyclic terpene hydrocarbons. No. 2,211,432. Robert C. Palmer and Carlisle H. Bibb to Newport Industries, Inc.

Production liquefied chlorine gas. No. 2,211,547. Joseph Reichart to I. G. Farbenindustrie A. G.

Leathers and Tanning

Improvement in method tempering leather, comprises treating leather with water and simultaneously associating sodium lactate with said leather, whereby leather will remain in temper for relatively longer period of time. No. 2,208,701. Laurence E. Puddfoot to United Shoe Machinery Corp.

Method rendering leather temporarily inert comprises immersing in non-aqueous liquid organic composition containing agent for rendering said leather temporarily inert from group of aliphatic compounds. No. 2,208,809. Joseph W. Johnson, John J. Brophy and Alexis E. Ushakoff to United Shoe Machinery Corp.

Process of tanning comprising subjecting tanning material to solution of reaction product obtained by reacting dehydrated ferrous sulfate and molecular oxygen in presence of ultra-violet light. No. 2,211,541. Willy Günther.

Metals, Alloys

In process of making hard metal bodies, improvement in sintered process which includes surrounding bodies during sintering operation with loose particles of carbide of at least one nonradicative refractory metal the 4th or 5th group, the particles being of sufficient size to permit fire to flow to gas through interstices thereof. No. 2,207,708. Clarence W. Balke and Claire C. Balke, to Ramet Corporation of America.

Process and apparatus for zinc smelting. No. 2,207,779. Frank G. Breyer.

Method of making semipyrophoric iron and the products obtained thereby. No. 2,207,879. Alfred Schmid to Oswald F. Wyss.

Ferrous alloys. No. 2,208,116. Arthur T. Cape and Charles V. Foerster.

Process for recovering tin and steel from tin plate. No. 2,208,138. Roger T. Robinson.

Veneer plate of aluminum alloy. No. 2,208,186. Isamu Igarashi and Shinkichi Higashio to Sumitomo Kinzoku-Kogyo Kabushiki Kaisha.

Method of melting magnesium and magnesium base alloys in induction furnaces. No. 2,208,242. Adolf Beck, Merman Schunck and Gunther Osterman to Magnesium Development Corp.

Method of operating an iron blast furnace. No. 2,208,245. Arthur J. Boynton to H. A. Brassert & Co.

Apparatus for the smelting out of zinc from dusts containing metallic zinc. No. 2,208,418. Otto Goeke to Huttenwerke Siegerland Aktiengesellschaft.

Process of obtaining bright and semi-bright electrodeposits of nickel. No. 2,208,657. Marcel Ballay to The International Nickel Co., Inc.

Process for the refining of silicon alloys. No. 2,208,974. Ture R. Haglund.

An alloy steel. No. 2,209,248. Daniel E. Krause and Clarence H. Lorig to Battelle Memorial Institute.

Reissue. Hard metal alloy, especially for tools. No. 21,520. Paul Schwarzkopf to The American Cutting Alloys, Inc.

Process for melting, converting and refining copper and recovering zinc from residues of alloys containing such materials. No. 2,209,481. Volf Sterental of ¾ to Davide Jona, Giulio Jona and Raffaele Jona.

Process producing heavy hollow cast steel blocks of substantially cylindrical internal shape. No. 2,209,519. Fritz Halbrock and Wilhelm Baumgardt to Deutsche Rohrenwerke Aktiengesellschaft.

High speed steels. Nos. 2,209,622-623. Eduard Houdremont and Hans Schrader to Patena, Ltd.

Silicon electrical steel sheet. No. 2,209,685. Walter Crafts to Electro Metallurgical Co.

Method etching aluminum. No. 2,209,712. Joseph B. Brennan.

Method passivating stainless steel to render it proof against corrosion by aqueous solution of H_2SO_4. No. 2,209,924. Ralph W. E. Leiter and Joseph Winlock to Edward G. Budd Mfg. Co.

Process making alloy of two or more metals which are immiscible in liquid state. No. 2,209,935. Martin L. Samuels to Battelle Memorial Institute.

Reduction of metals to a powder. No. 2,209,964. Allan W. Ferguson to Oxides, Inc.

Method forming metal strip directly from liquid metal. No. 2,210,145. Jean H. L. De Bats to Metal Carbides Corp.

Iron alloy suitable for electrical resistances. Nos. 2,210,308-9. Thomas Swinden to Kemet Laboratories Co., Inc.

Process attaching titanium carbide alloy containing auxiliary metal to a metallic base. No. 2,210,314. Peter Wright to Carl Eisen and Joseph J. Haesler.

Method removing metal from a ferrous metal body. Nos. 2,210,402-3. George M. Skinner to The Linde Air Products Co.

Lead alloy bearing metal. No. 2,210,504. Robert J. Shoemaker.

Bearing alloy comprising 5-15% Sb, .5-7.6-Ag. and balance tin. No. 2,210,593. William E. McCullough to Bohm Aluminum & Brass Corp.

Copper base alloys. Nos. 2,210,670-73. James M. Kelly to Westinghouse Electric & Mfg. Co.

Method producing rustproofing and bonding coat on ferrous metal surface. No. 2,210,850. Leo P. Curtin to Curtin-Howe Corp.

Process of thermo-chemically removing surface metal from elongated metal body, such as a steel billet. Homer W. Jones, James H. Bucknam and Edmund A. Doyle to The Linde Air Products Co.

Cyclic process treating sylvinite ores. No. 2,211, 396. Arthur J. Weinig to Potash Co. of America.

Selective flotation of sodium chloride from sylvinite ores. No. 2,211,-397. Arthur J. Weinig to Potash Co. of America.

Pickling solution for removal of scale from copper-base alloys. No. 2,211,400. Maurice L. Wood to Chase Brass & Copper Co.

Potassium-sodium-lead alloy highly resistant to crushing and breaking, and which reacts non-violently with water. No. 2,211,415. Harvey N. Bilbert to E. I. du Pont de Nemours & Co.

Method electrodepositing nickel. No. 2,211,535. Henry Brown to Udylite Corp.

Paper and Pulp

In manufacture of paper containing alkaline filler and a size comprising water insoluble soap, procedure for improving sizing effect in the fibrous web. No. 2,208,597. Harold R. Rafton to Raffold Process Corp.

Apparatus for regulating the consistency of pulp or stock. No. 2,210,-027. Hervey G. Cram.

Paper-coating pigment and pigment composition. No. 2,210,835. Chester A. Jones and William J. Montgomery to The Champion Paper & Fibre Co.

Petroleum

Process of converting a petroleum fuel oil into gas of predetermined calorific value and specific gravity together with a valuable liquid by-product. No. 2,207,985. Alfred Johnson and Morris M. Brandegee to Combustion Utilities Corp.

Process for polymerization of hydrocarbon gases. No. 2,208,100. Theodore A. Mangelsdorf and duBois Eastman to The Texas Co.

Stable motor fuel comprising light color gasoline stabilized by anthracene and lecithin against darkening and cloud formation. No. 2,208,105. Robert B. Rathbun to The Texas Co.

Solvent refining of hydrocarbon oil. No. 2,208,108. William E. Skelton to The Texas Co.

Lubricating composition. Nos. 2,208,161-163. Carl F. Prutton, Albert K. Smith, and Harry E. Johnson to The Lubri-Zol Development Corp.

Preparation of lubricating oils comprises beneficiating mineral oil with a hydro-compound of group consisting of hydroquinine, hydroquinidine, and hydrocinchonine. No. 2,208,218. Herman P. Lankelma to The Standard Oil Co. (Ohio).

Process for conversion of normal and branched-chain saturated hydrocarbons to branched and more highly branched-chain saturated hydrocarbons by use of catalyst and elevated temperatures. No. 2,208,362. Willem Frederik Engel to Shell Development Co.

Process for sweetening hydrocarbon oils. Nos. 2,208,505-510. Charles M. Blair, Jr., and Ira S. Boydstun to Petrolite Corp., Ltd.

Process producing lubricating oil of higher quality from hydrocarbon mixtures. No. 2,208,534. Ernst Bosing to Edeleanu Gesellschaft m.b.H.

In a process of sweetening petroleum distillates with lead sulfide suspended in a treating agent in a balanced condition, a method of maintaining the lead sulfide in active condition. No. 2,208,591. Ernest E. Lyder to Standard Oil Co. of Calif.

U. S. Chemical Patents
Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 213

U. S. Chemical Patents

Off. Gaz.—Vol. 516, Nos. 3, 4, 5—Vol. 517, Nos. 1, 2—p. 214

Method conducting unitary process for catalytic cracking of petroleum oils to gasoline in presence of clay catalyst. No. 2,209,140. Thomas P. Simpson, John W. Payne and John A. Crowley, Jr., to Socony-Vacuum Oil Co., Inc.

Manufacture of gasoline and fuel oil from reduced naphthenic crude petroleum of type commonly produced in California. No. 2,209,154. John J. Downey to Sinclair Refining Co.

Lubricating oils comprising wax-containing hydrocarbon oil containing small proportion of pour depressor and small proportion of extraneous hydrocarbon wax having higher melting point than that of wax contained in oil. No. 2,209,165. Edward J. Martin and James H. Kirk to Sinclair Refining Co.

Process for separating wax from wax-containing oils. No. 2,209,868. Walter W. N. Meyer to Standard Oil Development Co.

Method purifying liquid aromatic still residue. No. 2,209,316. Samuel G. Burroughs and Frank W. Corkery to Pennsylvania Industrial Chem. Corp.

Lubricant comprising mineral oil and small amount organic sulfur compound. No. 2,209,440. Elmer Wade Adams and George M. McNulty to Standard Oil Co., Chicago.

Method for recovering liquid products from gas held under pressure and containing wet and dry fractions. No. 2,209,534. Thomas V. Moore to Standard Oil Development Co.

Process extracting and dewaxing a hydrocarbon oil. No. 2,209,865. James W. Weir to Edeleanu Gesellschaft m.b.H.

Mineral oil composition stabilized against effects of oxidation by small amount of a N,N′-dithio-bis-alkylamine. No. 2,209,976. William H. James to Socony-Vacuum Oil Co., Inc.

Lubricant comprising mineral oil and ester derived from long chain aliphatic acid and short chain aliphatic alcohol having not more than 2 OH groups. No. 2,210,140. Ivor Milton.

Catalytic conversion of hydrocarbons. No. 2,210,257. Robert Pyzel and Clarence G. Gerhold to Universal Oil Products Co.

Hydrocarbon oil cracking process. No. 2,210,265. Jean Delattre Seguy to Universal Oil Products Co.

In refining petroleum oils by solvent extraction step comprising treating the oils with mixture of B,B′-dichlor-ethyl ether and B-methoxy ethanol. No. 2,210,383. John M. Russ, Jr., and Harvey R. Fife to Carbide & Carbon Chemicals, Corp.

Method of recovering selective solvents. No. 2,210,541. Sijbren Tijmstra to Shell Development Co.

Process of removing phenols from mineral oil. No. 2,210,542. Alva C. Byrns to Union Oil Co. of Calif.

Method for cracking oils in vapor phase. No. 2,210,549. Percy C. Keith, Jr., to Gasoline Products Co., Inc.

Method for the extraction of petroleum from oil sand deposit by mining operations. No. 2,210,582. Karl Grosse and Gunther Schlicht to Deutsche Petroleum Aktiengesellschaft.

In manufacture high viscosity lubricating oils from mineral oil, method of fractionating oil by extraction with liquid SO_2 in presence of a chlorinated aliphatic hydrocarbon solvent liquid having less selective action than said SO_2. Nos. 2,210,866-67. Francis X. Govers to Indian Refining Co.

Improvement in process converting hydrocarbon oil to produce antidetonating motor fuel. No. 2,210,901. Butler P. Crittenden to Arkansas Fuel Oil Co.

Method inhibiting oxidation of gasoline. No. 2,211,180. John W. Teter to Sinclair Refining Co.

Method for catalytic dehydrogenation. No. 2,211,219. Carlisle M. Thacker to The Pure Oil Co.

Preparation lubricating stock comprises sulfurizing fatty material and then phosphorizing the sulfurized material. No. 2,211,231. Lawrence M. Henderson to The Pure Oil Co.

Method of producing motor fuels from hydrocarbon gases. No. 2,211,248. Cary R. Wagner to The Pure Oil Co.

Lubricant and method of preparing same. No. 2,211,306. William A. Whittier and Norman D. Williams and Harry L. Moir to The Pure Oil Co.

Treatment of motor fuels with aromatic esters. No. 2,211,313. Frederic R. Bean to Eastman Kodak Co.

Pigments

As quick-drying varnish base, a mixture of rosin modified alkyd resin containing small amount of polar compound and a pure phenolic oil-soluble resin, admixed with a drying oil. No. 2,207,847. Laszlo Auer.

Preparation of paint and varnish remover. No. 2,207,967. William A. Bland and Edmund F. Oeffinger to E. I. du Pont.

Method producing new fluffy chromic oxide pigments. No. 2,209,899. Marc Darrin to Mutual Chem. Co. of America.

Method producing fluffy chromic oxide pigment. No. 2,209,907. Omar F. Tarr to Mutual Chem. Co. of America.

Steps in process making manganese activated luminescent material. No. 2,210,087. Humbolt W. Leverenz to Radio Corp. of America.

Method preparing a composition for use in paints. No. 2,211,495. John W. Church to The Tremco Manufacturing Co.

Resins, Plastics, Etc.

Preparation synthetic resins which comprises reacting a cyclohexanesulfonamide having at least one amido hydrogen with formaldehyde. No. 2,207,803. Julian W. Hill to E. I. du Pont.

Preparation of a phenolic plastic composition. No. 2,207,997. Robert P. Courtney to Bakelite Corp.

Process of producing insoluble condensation products containing sulfur and nitrogen. No. 2,208,095. Paul Esselmann, Kreis Bitterfeld, Karl Kosslinger and Joseph Dusing to I. G. Farbenindustrie Aktiengesellschaft.

Urea-formaldehyde condensation product and method of production. No. 2,208,290. Eustace Glycofrides.

Method removing baked phenol-formaldehyde coating from predominantly aluminum base by use of H_2SO_4. No. 2,208,294. Charles H. Hempel to Heresite & Chem. Co.

Synthetic resin comprising oil soluble solid product obtained by condensing with a methylene containing body a mixture of phenolic compounds. No. 2,208,331. John F. Olin to The Sharples Solvents Corp.

Naphthenic acid-modified alkyd resin. No. 2,209,198. Per K. Frolich to Standard Oil Development Co.

Process accelerating polymerization of compound containing $CH_2=C=C$ group by use of tetralin peroxide. No. 2,209,246. Walter Bauer and Ernst Trommsdorff to Rohm & Haas Co.

Process of removing solvents from plastic colloids. No. 2,209,256. Harry P. Bassett to Meigs, Bassett and Slaughter, Inc.

Manufacture of resins from lignin. No. 2,209,289. Frederick J. Wallace to Robeson Process Co.

Plastic composition for lining pressure vessels. No. 2,209,722. Gale L. Adams, Charles W. Starkey and Park Woolley to Socony-Vacuum Oil Co., Inc.

Method of forming hollow articles from plastic material. No. 2,209,877. Enoch T. Ferngren to Plax Corp.

Phenolketone-formaldehyde resinous condensation product. No. 2,209,903. Anderson W. Ralston, Robert J. Vander Wal, and Steward T. Bauer to Armour & Co.

In process producing glossy surface on thermoplastic materials by contacting them with solvent therefor, step of preconditioning materials to prevent embrittlement or deterioration of surface. No. 2,209,940. Carleton N. Smith to Carbide & Carbon Chemicals Corp.

Urea-formaldehyde molding composition and method of producing same. No. 2,209,943. Leonard Smidth to Luco Products Corp.

Synthetic resin printing ink. No. 2,210,461. Thomas A. Martone and Charles S. Towe to E. I. du Pont de Nemours & Co.

Apparatus for polishing and cleaning plastic articles. No. 2,210,584. Lawrence G. Hileman and Stephen T. Moreland and Joseph B. Potoczky to Owens-Illinois Glass Co.

Method making films, tubes, threads, tapes and like from polymeric materials. No. 2,210,771. James R. Myles and Leslie L. Bache to Imperial Chemical Industries, Ltd.

Reissue: Condensation products of higher fatty acids with alkylolamine containing hydrogen directly connected to nitrogen and at least one primary OH group. No. 21,530. Wolf Kritchevsky to Ninol, Inc.

Process producing homogeneous reaction product which comprises blending rubber with heat hardened phenolic condensation product. No. 2,211,048. Fritz Bitterich to Reichhold Chemicals, Inc.

Plastic masses comprising nitrocellulose and a polyvinyl ether soluble in solvent of group consisting of water methanol and ethanol. No. 2,211,436. Walter Reppe, Friederich Hoelscher and Adolf Menger and Eugen Bock to General Aniline & Film Corp.

Rubber

Rubberlike product comprising vulcanized mixture of olefine polysulfide and reaction product of glycerial polysulfide with polmer of vegetable oil which has been substantially completely heat polymerized to a gelatinous state and combined with glycerol. No. 2,208,305. Harvey G. Kittredge to The Kay & Ess Chem. Corp.

Method vulcanizing rubber in presence of primary amino hydroxy propane. No. 2,208,326. Joy G. Lichty to Wingfoot Corp.

Process vulcanizing rubber in presence of addition product of a saturated primary amine and a zinc salt of a dialkyl dithiocarbomic acid. No. 2,208,327. Joy G. Lichty to Wingfoot Corp.

Process vulcanizing rubber in presence of an aryl selenazyl 2-sulfide compound. No. 2,208,333. Winfield Scott to Wingfoot Corp.

Method making rubber hydrochlorides from rubber containing more than 2% by weight of zinc oxide. No. 2,208,441. Herbert A. Winkelmann to Marbon Corp.

Method washing rubber hydrochloride which contains substantial amount of iron until the rubber hydrochloride is substantially free from iron, and thereafter subjecting said rubber hydrochloride to heat and pressure in presence of basic stabilizer to produce milled, calendered, molded or like products. No. 2,208,442. Herbert A. Winkelmann to Marbon Corp.

Method of producing rubberlike compositions from petroleum hydrocarbons. No. 2,209,333. Edgar W. Hultman to The Hultene Rubber Corp.

Thin flexible sheet material coated with composition containing major proportion of rubber isomer(pliolite) and minor proportion of chlorinated diphenyl, said sheet being water and moisture proof. No. 2,209,965. Theron G. Finzel to E. I. du Pont de Nemours & Co.

System for storing latex. No. 2,210,160. Carl L. Beal to American Anode, Inc.

Article of manufacture comprising stainable rubber surface, thin temporary protective rubber coating, and layer of opaque, inert pigment uniformly intermixed with an antioxidant, on said coating. No. 2,210,177. Persons C. Rader to The B. F. Goodrich Co.

Method preserving organic substances which tend to deteriorate by absorption of oxygen from air which comprises incorporating a perimidine compound. No. 2,211,144. William E. Messer to United States Rubber Co.

Method reclaiming well-vulcanized soft rubber. No. 2,211,592. Allen D. Castello to B. F. Goodrich Co.

Vulcanization of rubber in presence of a basic nitrogen-containing accelerator and benzothiazyl l-thio methylene acetate. No. 2,211,616. Albert M. Clifford to Wingfoot Corp.

Textiles

Treatment of yarn with liquid media to remove a film forming substance. No. 2,207,789. George H. Ellis to Celanese Corp.

Coated fabric and the production thereof. No. 2,208,640. John H. McGill to Imperial Chemical Industries, Ltd.

Apparatus for washing and extracting liquids from textiles. No. 2,208,830. Rex E. Bassett, Jr., to Bendix Home Appliances, Inc.

Process of saponifying artificial textile materials. No. 2,208,857. Paul Schlack to I. G. Farbenindustrie Aktiengesellschaft.

Method treating freshly spun rayon comprising washing in package form with water, treating same wih alkaline desulfurizing agent, disseminating said agent throughout said package by means of steam and again washing with water. No. 2,208,965. Jacob Dousma to American Enka Corp.

Fibrous glass textile material for electrical insulation. No. 2,209,850. Errol B. Shand and James F. Hyde to Owens-Corning Fiberglas Corp.

Aqueous textile fiber impregnating composition. No. 2,210,595. Max Nassau, Fritz Sommer and Georg Wiegand to Chemische Fabrik Grunau Landshoff & Meyer A. G.

Fibers from ethylene polymers. No. 2,210,774. Michael W. Perrin, John G. Paton and Edmond G. Williams to Imperial Chemical Industries, Ltd.

Process for preparation of a textile sizing. No. 2,211,266. Henri Gibello to Société Nobel Francaise.

Digest of Vol. 517, No. 2, will be completed next month.

Foreign Chemical Patents
Canadian, English and French—p. 28

Abstracts of Foreign Patents

Collected from Original Sources and Edited

By E. L. Luaces, Chemical and Patent Consultant

To assist those making use of this summary, it might be well to comment briefly on the system used by each of these countries in reporting patents.

Canada grants the patent on the date of publication. Printed copies are not obtainable, but typewritten certified copies may be obtained at a cost averaging about five dollars each.

English "patents" here reported are known as *Complete Specifications Accepted*. They are printed for distribution at a cost of ls. ld. each. They are subject to opposition by interested parties for a period of two months from date of publication.

French patents are granted several months before publication. Allowed applications are open to public inspection on payment of a fee, but no copies may be purchased nor notes made from the original. Printed copies of specifications are available to public several months after issue at 10 francs each, plus postage.

Belgian patents are granted several months before publication. No printed copies are available, but photostat copies may be obtained at a cost of from 3.5 to 4.5 francs per page.

In this digest the latest available data will be published as obtained from original sources. It will be readily understood that present conditions bring about delays in transportation and that for that reason the coverage will vary from month to month. We expect shortly to be able to begin publication of abstracts of German patents.

Present conditions make it impossible to obtain printed copies or photostats of French and Belgian patents, but this should shortly be corrected. We shall be glad to assist those interested in obtaining copies of Canadian and English patents. Your comments and criticism will be appreciated.

CANADIAN PATENTS

Granted and Published July 16, 1940.

Producing edible fatty esters by reacting glycerine with fat in presence of an alkaline catalyst, forming a synthetic fatty ester containing soap, and treating with citric acid to remove soap. No. 389,953 (See also Nos. 389,954 to 389,957). Leo C. Brown, Donald P. Grettie and Guy W. Phelps.

Improved method of liquid distillation and apparatus therefor. No. 389,970. Jean Loumiet et Lavigne.

Manufacture of light-weight insulating fire-brick from refractory material, hydraulic cement and water. No. 389,985. The Babcock & Wilcox Company (Charles L. Norton, Jr.).

Preparing bis-acetoacetyl o-tolidine by reacting diketene with o-tolidine in solution in inert solvent for reactants and separating from resultant reaction mixture and recovering bis-acetoacetyl o-tolidine thus produced. No. 390,003. Carbide and Carbon Chemicals Limited (Albert B. Boese, Jr.).

Preparing an acetoacetyl aromatic acid amide by heating diketene with a chlor aniline in presence of solvent inert to reactants, and separately recovering the acetoacetyl aniline produced. No. 390,004. Carbide & Carbon Chemicals Limited (Albert B. Boese, Jr.).

Producing carbohydrate fatty acid esters from starch factory by-products by extracting fatty acids from residues containing same, converting them to their anhydrides or chlorides, and reacting products in solution with starch converted sugars in presence of acid converting catalyst. No. 390,010. Corn Products Refining Company (Sidney Mark Cantor).

Process for rendering water soluble the titanium values of titaniferous ores. No. 390,014 (See also No. 390,015). E. I. du Pont de Nemours & Co., Inc. (James E. Booge, Ignace J. Krchma and Robert M. McKinney).

Sulfuric acid extraction of titaniferous ores for recovery of titanium compounds. Nos. 390,016 and 390,017. E. I. du Pont de Nemours & Co., Inc. (Ford H. McBerty).

Preparing base-exchange media by treating water-soluble tannin-like wood extracts with a dehydrating, strongly acid agent until they are rendered water insoluble. No. 390,021. Ellis-Foster Company (Carleton Ellis).

Plant fertilizer containing crystalline sodium metaphosphate. No. 390,029. Hall Laboratories, Inc. (Everett P. Partridge).

Plastic setting mass adapted for use as coating and sizing composition and containing casein and an alkali-metaly tripolyphsophate. No. 390,030. Hall Laboratories, Inc. (Charles Schwartz).

Producing low-boiling hydrocarbons of the motor fuel type. No. 390,031. Houdry Process Corporation (Arthur E. Pew, Jr.).

Paper containing filler material containing at least 5% by weight of aluminum phosphate pigment. No. 390,044. Paper Patents Company (Louis C. Fleck).

Wrapping paper for protecting food products impregnated with substance capable of evolving a predetermined alkaline gas under conditions of use. No. 390,047. Preservators Limited (Arthur Ryner).

Cheese-wrapping foil having in contact with cheese surface composed of tin containing small percentage of inhibiting agent anodic with respect to tin and adapted to maintain it polarized. No. 390,053. Reynolds Metals Company (Ernest Scheller).

Detoxicant therapeutic compound comprising lanolin sol of colloidal particles substantially 1 micron in size and unstabilized by other substances. No. 390,054. J. C. Shay, Inc. (Garth W. Boericke and William W. Young).

Process for extracting potassium carbonate and aluminum hydroxide from leucite. No. 390,057. Societá Italiana Potassa (Remo S. Opatowski and Piero Adamoli).

Preparing water-soluble compounds of therapeutical value by causing aldehydes of the group consisting of aromatic aldehydes, arylaliphatic aldehydes and aliphatic unsaturated aldehydes to react with para-aminobenzene-sulfonamide and bisulfites. No. 390,059. Société des Usines Chimiques Rhône-Poulenc (Robert L. Despois).

Granted and Published July 23, 1940.

Moulding colloidal matter by forming viscous solution of a colloid in a volatile solvent and adding grains in state of starting solvatation by said volatile solvent. No. 390,085. Paul L. Mergier and Pierre E. Leroy.

Magnesium alloy. No. 390,092. Fritz Christen.

Production of starchy vegetable powder. Nos. 390,116 and 390,117. Zelmanas Volpertas.

Crystallizing evaporator. No. 390,118. Zaremba Company (Burton S. Hughes).

Vinyl resin finishing system for metallic surfaces. No. 390,142. Carbide and Carbon Chemicals Limited (Arthur K. Doolittle).

Composite abrasive sheet. No. 390,143. The Carborundum Company (Albert L. Ball).

Production of organic halogen compounds by reacting with halogenating material solid polymer of ethylene having molecular weight in excess of about 2000. No. 390,150. Imperial Chemical Industries Limited (Eric W. Fawcett).

Gas treating (scrubbing) apparatus. No. 390,151. Imperial Chemical Industries Limited (Henry S. Sayles).

Production of rubber composition. No. 390,168. The Patent and Licensing Corporation (Edwin O. Groskopf).

Production of nitrogen-containing organic compounds wherein at least one carbon atom is linked by a double bond to one nitrogen atom and by a single bond to another nitrogen atom by reacting equimolecular quantities of an aliphatic amidine and an organic compound of the class consisting of iminating and acylating agents. No. 390,176. Shell Development Company (Adrianus J. van Peski).

Chemical heating pad for use in waving hair. No. 390,189. United States Appliance Corp. (Frederick L. Reynolds and Leon Markel).

Process for cracking hydrocarbons. No. 390,190. Universal Oil Products Company (Charles H. Angell).

Processes for cracking hydrocarbons. Nos. 390,191 and 390,192. Universal Oil Products Company (Lyman C. Huff).

Plastic composition comprising cork in granular form together with Gilsonite. No. 390,197. Orville V. McGrew.

Color master material containing pigment and an organic cellulose derivative, the pigment being dispersed in an oil present in from 1 to 10% of the weight of cellulose derivative present. No. 390,200. Camille Dreyfus (George Schneider).

Reacting with acetylene upon acetic acid in presence of mercuric oxide, boron trifluoride and hydrogen fluoride. No. 390,205 (See also No. 390,206). I. G. Farbenindustrie A. G. (Otto Nicodemus and Walter Weibezahn).

Reacting with acetylene upon aliphatic monocarboxylic acids in presence of mercury compound promoting the action with addition of boron trifluoride-acetic acid. No. 390,207. I. G. Farbenindustrie A. G. (Heinrich Lange and Otto Dorrer).

Reacting with acetylene upon oxalic acid monoethyl ester in presence of mercuric oxide and boron trifluoride-acetic acid. No. 390,208. I. G. Farbenindustrie A. G. (Otto Nicodemus, Heinrich Lange and Otto Horn).

Preparation of bleached cellulose products. No. 390,211. Deutsche Gold und Silber Scheideanstalt vormals Roessler (Emil Scheller).

Process and apparatus for producing alcohol from carbohydrate containing liquids. No. 390,213. Deutsches Reich, Reichsmonopolverwaltung für Branntwein (Walter Karsch).

Permanently thermoplastic fabrics mouldable under heat and pressure containing threads uniformly coated prior to formation of the fabric with a lacquer containing polymerized olefinic compound. No. 390,215. I. G. Farbenindustrie A. G. (Rudolf Semmig and Hugo Gärtner).

Foreign Chemical Patents
Canadian, English and French—p. 28

Foreign Chemical Patents

Canadian, English and French—p. 29

Chromable dyestuff. Nos. 390,216, 390,217 and 390,220. I. G. Farbenindustrie O. G. (Wilhelm Eckert and Karl Schilling).

Ester corresponding to the general formula $(R\text{-}COO)_n\text{-}X$ wherein R. stands for the radical of a hydrocarbon from the class consisting of aliphatic and cycloaliphatic hydrocarbons containing at least 6 carbon atoms, X for a cyclic radical containing at least three condensed rings, and $_n$ for a whole number. No. 390,218. I. G. Farbenindustrie A. G. (Heinrich Neresheimer, Anton Vilsmeier and Karl Heymann).

Converting olefines into liquid hydrocarbons products by polymerizing in the presence of an aluminum halide as catalyst and of a halogen hydrocarbon as dispersion agent. No. 390,219. I. G. Farbenindustrie A. G. (Walter Flemming and Wilhelm Baumeister).

Process comprising causing sodium methylate to act upon 1.2-dichlorobutene-3 in the presence of boiling methanol and distilling off the 2-chlorobutadiene-1.3 in the moment of its formation together with methanol. No. 390,221. I. G. Farbenindustrie A. G. (Heinrich Lange and Otto Horn).

Titanium pigment comprising crystals of titanium dioxide crystallizing tetragonally and titanium sesquioxide crystallizing rhombohedrally in the corundum type. No. 390,222. I. G. Farbenindustrie A. G. (Georg Meder).

Dry adhesive comprising a urea formaldehyde condensation product and a hardening agent hardening only at the temperature effecting adhesion. No. 390,223. I. G. Farbenindustrie A. G. (Eugen Bock and Adolf Menger).

Production of lubricating oils by polymerization using a metal halide as catalyst. No. 390,233. Ruhrchemie A. G. (Herbert Goethel, Paul Schaller and Heinrich Tramm).

Recovery of highly concentrated acetylene from gas mixtures containing acetylene and other highly unsaturated compounds. No. 390,234. Ruhrchemie A. G. (Heinrich Tramm and Helmut Kolling).

Preparation of catalyst containing magnesium oxide and cobalt for catalytic hydrogenation of carbon oxides. No. 390,235. Ruhrchemie A. G. (Heinrich Heckel and Otto Roelen).

Process for granulating ground coffee. No. 390,236. Seelig & Hille (Arthur Roscher and Franz von Herrenburger).

Sealing ceramic material by sintering a layer of high melting non-noble metal of the ceramic material and then subjecting it to a reducing atmosphere. No. 390,237. Siemens & Halske A. G. (Horst Schillbach).

Process for obtaining lead from chlorinated, roasted and lixiviated pyrites. No. 390,244. Duisburger Kupferhütte *and* I. G. Farbenindustrie A. G. (Ernst Kuss).

Opening up material containing cellulose by treating with a halogen hydride in the presence of an organic solvent in which the halogen hydride is soluble. No. 390,250. Phillipp F. Reemtsma (Heinz Berkel).

Granted and Published July 30, 1940.

Obtaining valuable organic compounds from coal extracts by washing to remove sulfur with an alkali solution at temperature below boiling point of water under pressure obtaining, and then catalytically destructively hydrogenating them. No. 390,270. Henry Dreyfus.

Salve or ointment comprising mixed cod liver oil, cholesterin and liquid paraffin. No. 390,273. James Y. Ferguson.

Process for dehydrating lignite. No. 390,286. Eugene P. Schoch.

Continuously producing vegetable lecithin containing absorbed water by subjecting vegetable oils to precipitation with water and removing the lethicin and water from the oil. No. 390,288. Benjamin H. Thurman.

Coating composition comprising a film-forming constituent consisting essentially of a composition produced by compounding an oil-soluble resin and a glyceride type oil with a water-insoluble cellulose ester. No. 390,296. Atlas Powder Company (Edmond H. Bucy).

Liquid coating composition comprising a volatile solvent having dissolved therein a mass comprising by weight: 1-4 parts oil-soluble phenol-aldehyde resin, 2-5 parts resin comprising oxidized abietic acid, and 37-51 parts of drying oil. No. 390,308. Canadian General Electric Company, Limited (Arthur J. Sherburne).

Method of preparing stable emulsions of tetrachlorethane in water. No. 390,315. Canadian Industries Limited (Arthur A. Elston).

Decreasing a resistance to flow of unvulcanized rubber by subjecting it to the action of a thiocarboxylic acid compound. No. 390,316. Canadian Industries Limited (Carroll Cummings Smith and Ira Williams).

Treating normally liquid hydrocarbon mixture containing relatively paraffinic and relatively non-paraffinic compounds by extracting the hydrocarbon mixture with isopropyl ethynyl carbinol. No. 390,317. Canadian Industries Limited (Harold S. Holt).

Producing a monohydric acetylenic alcohol by reacting a ketone and acetylene in presence of a salt of monoalkyl ether of a glycol and hydrolyzing the salt of the acetylenic alcohol thus produced. No. 390,325. Carbide and Carbon Chemicals Limited (Granville A. Perkins).

Solvent extraction refining of petroleum oils by treating with a mixture of β,β'-dichlorethyl ether and one of the group consisting of methanol and β-methoxy ethanol. No. 390,326. Carbide and Carbon Chemicals Limited (John M. Russ, Jr., and Harvey R. Fife).

Converting sheet cellulose into alkali cellulose by corrugating the sheet, passing it through a mercerizing bath and then pressing out excess solution. No. 390,334. Courtaulds, Limited (Eric A. Morton).

Converting sheet cellulose into alkali cellulose by passing through a mercerizing bath, bringing it into contact with non-impregnated cellulose, and applying pressure while the impregnated cellulose is in contact with the non-impregnated. No. 390,335. Courtaulds, Limited (William H. Stokes and Eric A. Morton).

Rubber composition having incorporated therein 2-thion hexamethylene imine. No. 390,339. Dominion Rubber Company, Limited (Louis H. Howland).

Making cellulose derivatives by preparing an alkali cellulosate by reacting substantially anhydrous cellulose with an alkali amide in a medium of liquid ammonia at a temperature below 25° C. and under the vapor pressure of ammonia at the temperature employed. No. 390,340. The Dow Chemical Company (Floyd C. Peterson and Arthur J. Barry).

Production of water soluble cellulose ether. No. 390,341. The Dow Chemical Company (Albert T. Maasberg).

Synthetic linear condensation polymer in the form of a crimped fibre having its crimps preponderantly in helices. No. 390,343. E. I. du Pont de Nemours & Co., Inc. (Vernal R. Hardy and John B. Miles, Jr.).

Manufacture of wool-like products by twisting into threads a plurality of synthetic linear condensation polymer filaments and cold drawing the thread to such an extent that some of the filaments break. No. 390,344. E. I. du Pont de Nemours & Co., Inc. (John B. Miles, Jr.).

Amide of ortho-phosphoric acid wherein a hydroxyl group of the acid is replaced by a dodecylamino group and a further hydroxyl group is esterified with a lower aliphatic monohydric alcohol. No. 390,345. E. I. du Pont de Nemours & Co., Inc. (Robert B. Flint and Paul L. Salzberg).

Reacting together an organic halide with a solution of the alkali addition compound of a polycyclic aromatic hydrocarbon. No. 390,346. E. I. du Pont de Nemours & Co., Inc. (Norman D. Scott and Joseph F. Walker).

Catalytic process for hydration of olefine. No. 390,347. E. I. du Pont de Nemours & Co., Inc. (Herbert G. Tanner).

Photographic emulsion containing a color former fast to diffusion able to form a dyestuff selected from the group of quinoneimine-, azomethine-, and azo-dyestuffs, and having a carbohydrate linked thereto. No. 390,350. General Aniline & Film Corporation (Wilhelm Schneider and Alfred Frölich).

Antigen specific to the determination of pregnancy by intradermal injection comprising a neutralized inorganic alkaline hydroxide extract of the foetal layer of placental tissue free from any portion of the maternal layer. No. 390,366. Lakeland Foundation (Benjamin Gruskin).

Transparent adhesive sheet having transparent flexible sheet backing and an adhesive coating firmly united thereto and comprised of raw rubber and low-acid type ester gum combined in proportions such that the coating is highly coherent and normally tacky and pressure sensitive. No. 390,369. Minnesota Mining and Manufacturing Company (Richard G. Drew).

Producing organic compounds containing sulfur, oxygen, by reacting additional complexes of sulfur dioxide and compounds containing the ethylenic double bond with an amine body of the group primary amines, secondary amines and ammonia. No. 390,372. Phillips Petroleum Company (Robert D. Snow).

Producing polymeric products of high molecular weight by reacting sulfur dioxide with mono-olefins at temperature below 15° C. No. 390,373. Phillips Petroleum Company (Robert D. Snow).

Process for the conversion of olefin into alcohol. No. 390,409. The Distillers Company Limited (Walter P. Joshua, Herbert M. Stanley and John B. Dymock).

Increasing the yield of carbohydrate of plants bearing it by treating the soil with finely divided natural silicic acid. No. 390,412. Carl Oetling.

Leuco esters of the anthraquinone series. No. 390,414. Wilhelm Muenster, Karl Koeberle, Max Bertl and Wilhelm Bauer.

Peri-naphthindenone. No. 390,415. Karl Koeberle, Werner Rohland and Christian Steigerwald.

Producing fast dyeings by treating in an acid bath the material to be dyed with acetoacetylaminoazaphenenthrenea, and then allowing solutions of diazo compounds to act on the fibres thus treated. No. 390,416. Karl Koeberle, Heinrich Scholz and Julius Eisele.

Vat dyestuff of the peri-naphthindenone series. No. 390,417. Karl Koeberle, Werner Rohland and Christian Steigerwald.

Diesel oil having incorporated therein up to 5% of condensation product derived from a high molecular weight aliphatic hydrocarbon and an oxygen-containing aromatic compound. No. 390,418. Mathias Pier, Friedrich Christmann and Willy Hirschberger.

Purification of carbon black containing metal carbide by treating at temperatures exceeding 400° C. with at least one of the substances: chlorine gas and hydrogen chloride gas. No. 390,419. Hans Heinrich Franck and Diederich Wilm.

Separation of tertiary olefines from gas mixtures. No. 390,420. I. G. Farbenindustrie A. G. (Georg Stern and Wilhelm Friedrichsen).

Coloring liquid and solid hydrocarbons by dissolving therein coloring matter obtained by condensing 1 molecular proportion of cyanuric chloride with 1-3 molecular proportions of polynuclear aromatic compounds. No. 390,421. Karl Schmidt and Ottmar Wahl.

Fast chromable dyestuffs. No. 390,422. Wilhelm Eckert and Karl Schilling.

Gas producer. No. 390,425. Fritz Winkler and Eduard Linckh.

Dyestuffs of the anthraquinone series. No. 390,426. Fritz Baumann and Heinz-Werner Schwechten.

Production of silicic acid filaments. No. 390,427. Franz Skaupy and Gustav Weissenberg.

Centrifugal purification of wood pulp. No. 390,430. Hellmuth Banning.

Apparatus for producing fire-extinguishing foam. No. 390,435. Wilhelm Friedrich.

Apparatus for injecting medicaments into cavities of the human body. No. 390,436. Herbert Fromm.

Manufacture of magnesium and its alloys using as flux a mixture of magnesium fluoride and calcium nitride. No. 390,437. Daniel Gardner.

Process for the simultaneous drying of gases and liquids. No. 390,438. Richard Gerlach.

Production of pure cellulose from grassy material. No. 390,441. Martin Günther.

Manufacture of condensation products of aromatic sulfonic acids having amide-like structure. No. 390,443. Johann Huismann.

Production of water-soluble azo dyestuffs on the fibre by the ice-color method. No. 390,444. Karl Jellinek.

Manufacture of laminated glass having an intermediate layer of polymerized products of organic compounds. No. 390,445. Adolf Kämpfer.

Production of electroplated deposits on articles of aluminum and its alloys after currentless preparation by means of zincate dipping solution. No. 390,448. Joachim Korpiun.

Method of de-hairing hides preparatory to tanning. Nos. 390,453 and 390,454. Otto Röhm.

Porous bearing composition comprising spongy iron particles directly welded together without admixtures of a bonding metal of lower melting point. No. 390,457. Hans Vogt.

Treatment of fibrous vegetable materials excluding textile fibres and vegetable fibres which can be spun and woven directly. No. 390,458. Alfred Wohl.

Granted and Published August 6, 1940.

Hydration of olefines by reacting with water vapor at elevated temperature and pressure in presence of hydration catalyst essentially comprising silicotungstic acid. No. 390,498. Carbide and Carbon Chemicals Limited (James F. Eversole and Charles W. Rehm).

Producing styrene from an alkyl-substituted benzol by reacting in a heated cracking zone for the alkyl-benzol a mixture of alkyl-benzol and substantial proportions of a halogenated compound and a dehydrohalogenating agent. No. 390,499. Carbide and Carbon Chemicals Limited (Omar H. Smith).

Adjusting the viscosity-plasticity characteristic of water dispersion of an acrylic resin by adding a solvent for the resin to cause swelling thereof. No. 390,506. Dewey and Almy Chemical Company of Canada Limited (Maynard S. Renner).

Making an article by making mixture of an aqueous dispersion of rubber and a gelling agent, forming therefrom a plastic gel and giving a final shape to the article by subjecting the wet gel to plastic flow. No. 390,507. Dewey and Almy Chemical Company of Canada Limited (William C. Ross and Arnold P. Rehbock).

Foreign Chemical Patents
Canadian, English and French—p. 30

Color-forming photographic emulsion containing N,N'-difuroylacet-benzidine-sulfone. No. 390,508. Du Pont Film Manufacturing Corporation (Andrew B. Jennings and Edmund B. Middleton).

Photographic element bearing at least one color-forming photographic emulsion layer comprising a binding agent, silver halide and 4,4'-bis-(3-methyl-pyrazolonyl-1)-diphenylthioxide. No. 390,509. Du Pont Film Manufacturing Corporation (Andrew B. Jennings and Edmund B. Middleton).

Method of treating fibres to facilitate spinning them with fibres of same or other kind which comprises treating fibres with solution of sulfocyanide and an adherent material. No. 390,518. The Hatters' Fur Exchange, Inc. (Leo Frenkel).

Glue composition comprising vegetable protein material, an agent providing a sulfur derivative of carbonic acid, casein, and caustic soda sufficient to control thickness. No. 390,527. I. F. Laucks Ltd. (Irving F. Laucks and Glenn Davidson).

Producing ascorbic acid by treating diacetone-keto-gulonic acid with strongly concentrated hydrochloric acid. No. 390,534. Merck & Co., Inc. (Otto Zima).

Producing ascorbic acid by treating a compound of the group consisting of 2-keto-gulonic acid, its methylene ether derivatives other than diacetone-keto-gulonic acid, and its lower aliphatic alcohol esters with strongly concentrated hydrochloric acid. No. 390,535. Merck & Co., Inc. (Otto Zima).

Process for continuously producing acetylene. No. 390,565. Shawinigan Chemicals Limited (Arthur Hoijord Anderson and George Meredith Mason).

Improvement of pottery clays by controlling pH of clay masses. No. 390,577. Wisconsin Alumni Research Foundation (George J. Barker and Emil Truog).

Preparing substance of high antirachitic effectiveness by activating an aqueous solution or suspension of a proteinaceous material before or after separating the proteinaceous material from other material soluble in the aqueous solution. No. 390,581. The Borden Company (George C. Supplee).

Method of producing irradiated evaporated milk in which irradiation precedes the completion of the evaporation step. No. 390,582. National Carbon Company, Inc., *and* The Borden Company (George C. Supplee).

Films or foils substantially impervious to water and which are flexible, comprising cellulose acetate having an acetyl value of 62.5% determined as acetic acid, said acetate being formed by reacetylating a cellulose acetate of lower acetyl value, and more than 35%, based on the weight of the cellulose acetate present, of plasticizer. No. 390,588. Camille Dreyfus.

ENGLISH COMPLETE SPECIFICATIONS

Accepted and Published May 29, 1940.

Depilatory. No. 521,240. R. L. Evans and E. G. McDonough.

Stabilized protein curd. No. 521,343. Atlantic Research Associates, Inc.

Manufacture of steels and alloy steels. No. 521,254. Société d'Electrochimie, d'Electrometallurtie, et des Acieries Electriques d'Ugine.

Recovery of aliphatic acids. No. 521,202. Henry Dreyfus and W. H. Groombridge.

Manufacture of symmetrical carbocyanine dyestuffs. No. 521,165. I. G. Farbenindustrie A. G.

Electrodeposition of cuprous oxide. No. 521,269. Kansas City Testing Laboratory.

Manufacture and use of photographic sensitizing dyes. No. 521,169. Du Pont Film Manufacturing Corp.

Manufacture of synthetic rubberlike materials. No. 521,277. I. G. Farbenindustrie A. G.

Manufacture of cation-exchange artificial resins. No. 521,207. I. G. Farbenindustrie A. G.

Treatment of aluminum or aluminum alloy surfaces. No. 521,290. Cie. de Produits Chimiques et Electrometallurgiques Alias, Froges, et Camarque.

Dissolved acetylene. No. 521,281. E. I. du Pont de Nemours & Co., Inc.

Recovery of lithium salts from lithium containing materials. No. 521,210. Bolidens Gruvaktiebolag.

Insecticidal composition. No. 521,211. Dow Chemical Company.

Manufacture of colored artificial cellulose textiles and pigments therefor. No. 521,212. Société Industrielle de Moy.

Bonding of fullers earth and other adsorbent granular materials. No. 521,214. H. H. Greger.

Method for reducing the water-retaining power of cellulose products. No. 521,307. Vereinigte Glanzstoff-Fabriken A.G.

Apparatus for electrostatic precipitation of suspended matter from gases. No. 521,316. Metropolitan-Vickers Electrical Co., Ltd.

Process and apparatus for the concentration of sulfuric acid. No. 521,362. H. Pauling.

Biological purification of sewage or sewage gases. No. 521,365. J. D. Griffin.

Manufacture of urea formaldehyde condensation products. No. 521,380. Beck, Koller, & Co. (England), Ltd.

Production of cellulose acetate gels and plastic masses. No. 521,325. Ets. Kuhlmann.

Production of cattle feed containing molasses. No. 521,332. Svenska Sockerfabriks Aktiebolaget.

Accepted and Published June 5, 1940.

Method of separating or recovering mercury from finely ground ores. No. 521,488. White, Hughes, & Co., Ltd.

Polymerizable composition. No. 521,489. Imperial Chemical Industries Ltd.

Production of diazotype light-sensitive layers. No. 521,492. S. C. & P. Harding, Ltd.

Manufacture of synthetic rubberlike materials. No. 521,545. Imperial Chemical Industries Ltd.

Manufacture of compositions for coating, binding, water-proofing and insulating. No. 521,590. Standard Oil Development Company.

Manufacture of plastic compositions. No. 521,444. H. Carroll.

Treatment of liquid distillable carbonaceous material containing solid matter in dispersion with hydrogen. No. 521,391. N. V. Internationale Hydrogeneeringsoctrooien Mij.

Production of cellulose derivatives. No. 521,446. F. H. Reichel and R. T. K. Cornwell.

Manufacture of compounds of the cyclopentanopolyhydrophenanthrene series. No. 521,447. Schering A. G.

Production of phenol aldehyde synthetic resins. No. 521,396. Bakelite, Ltd.

Method of producing resins. No. 521,400. H. R. Moore.

Manufacture of flooring from ground wood. No. 521,404. U. Frey.

Manufacture and application of coating compositions incorporating polysulfide plastic condensation products. No. 521,497. Imperial Chemical Industries, Ltd.

Manufacture of lake pigments. No. 521,509. Imperial Chemical Industries, Ltd.

Production of carbon monoxide-containing gases. No. 521,425. Power-Gas Corp., Ltd.

Desizing agents. No. 521,468. Kalle & Co., A. G.

Recovery of oil from whale meat. No. 521,521. Southern Whaling & Sealing Co., Ltd.

Manufacture of soap and soap products. No. 521,566. Lever Bros. & Unilever, Ltd.

Manufacture of silicate compositions. No. 521,567. J. Crosfield & Sons, Ltd.

Chrome hardening processes. No. 521,572. Sheepbridge Stokes Centrifugal Castings Co., Ltd.

Preparation of amino-alkoxy-diphenyl derivatives. No. 521,575 Société des Usines Chimiques Rhone-Poulenc.

Production of aliphatic ketone-diarylamine anti-oxidenats. No. 521,576. U. S. Rubber Products, Inc.

Treatment of rubber and similar oxidizable substances. No. 521,578. U. S. Rubber Products, Inc.

Preparation of purified latex. No. 521,436. Rubber-Stitching Co.

Composition of matter comprising the flocculation product of the interaction of alkaline earth metal carbonate and paraffin emulsion. No. 390,590. Raffold International Corporation (Harold R. Rafton).

Aluminum article having a clean bright aluminum specular reflecting surface provided with a protective coating consisting substantially of aluminum oxide artificially formed integral with said surface, said oxide coated surface having a reflection factor of at least 80%. No. 390,591. Aluminum Limited (Ralph B. Mason).

Preparing titanium-containing pigments by hydrolyzing aqueous solution containing titanium salt at temperature not exceeding boiling point of solution at normal conditions of pressure and then heating the precipitated titanium-containing crude pigment in presence of aqueous solution containing a free strong acid to temperature between 250 and 370° C. under at least the pressure corresponding to vapor pressure of the liquid at temperature employed. No. 390,598. I. G. Farbenindustrie A. G. (Julius Drucker).

Accepted and Published June 12, 1940.†

Catalytic cracking of hydrocarbons. No. 521,687. I. G. Farbenindustrie A. G.

Apparatus for handling liquid carbon dioxide. No. 521,792. E. Geertz and J. E. Taylor.

Pyridine derivatives. No. 521,749. Imperial Chemical Industries Limited.

Process for purifying water. No. 521,639. R. Adler.

Treating gelatine. No. 521,646. E. E. Jelley.

Shellac modifications. No. 521,718. A. F. Suter, A. Janser and W. E. Suter.

Production of phenol aldehyde synthetic resins. No. 521,799. Bakelite, Ltd.

Process for the manufacture of wool dyestuffs of the anthraquinone series. No. 521,800. I. G. Farbenindustrie A. G.

Method for the production of dyeings on protein fibres. No. 521,648. O. B. A. Nilssen.

Urea formaldehyde resin adhesives. No. 521,653. Resinous Products & Chemicals Co.

Means and process for the manufacture of synthetic plastics. No. 521,656. University of Calcutta.

Extraction of mineral oils with selective solvents. No. 521,658. Edeleanu Ges.

Apparatus for coating the inner surface of a tube with powdered material. No. 521,659. General Electric Company, Ltd.

Treatment of artificial fibres obtained from casein. No. 521,756. Montecatini Societa Generale per l'Industria, Mineraria e Chimica.

Laminated elastic fabrics and method of making same. No. 521,723. International Latex Processes, Ltd.

Producing filaments, threads, and the like cellulose products. No. 521,727. Vereinigte Glanzstoff Fabriken A. G.

Metal vapor discharge devices. No. 521,763. General Electric Co., Ltd.

Rubberlike compositions. No. 521,764. Craigpark Electric Cable Co., Ltd.

Coating of articles with metallic layer by cathode disintegration. No. 521,768. B. Berghaus.

Silver alloys and electrical contacts comprising such alloys. No. 521,774. Mallory Metallurgical Products, Ltd.

Copper-base alloys. No. 521,731. Mallory Metallurgical Products, Ltd.

Bacterial fermentation of carbohydrates. No. 521,849. Lummus Co.

Production and treatment of artificial threads, fibres and the like. No. 521,856. Henri Dreyfus.

Production of copper-base alloys. No. 521,733. Mallory Metallurgical Products, Ltd.

Manufacture of addition agents for lubricating oils. No. 521,776. Standard Oil Development Company.

Preparation of therapeutically useful heterocyclic compounds. No. 521,821. May & Baker, Ltd.

Soap. No. 521,863. Monsanto Chemical Company.

Apparatus for collecting and conveying sludge or solids in connection with the treatment of sewage. No. 521,876. Mills & Co. (Engineers), Ltd.

Isolation of minerals. No. 521,883. E. I. du Pont de Nemours & Co., Inc.

Manufacture of cellulose esters. No. 521,884. I. G. Farbenindustrie A. G.

Production of ascorbic acid. No. 521,831. Pfizer & Co.

Accepted and Published June 19, 1940.†

Pressure extraction of coals. No. 522,096. I. G. Farbenindustrie A. G.

Method of manufacturing thioesters. No. 521,944. Karnbolaget Aktiebolaget.

Polymeric materials. No. 521,946. E. I. du Pont de Nemours & Co., Inc.

† Subject to opposition for two months from this date.

Foreign Chemical Patents
Canadian, English and French—p. 30

Foreign Chemical Patents

Canadian, English and French—p. 31

Calcium sulfate plasters and cements and products made therefrom. No. 521,997. Imperial Chemical Industries Limited.

Manufacture of composite board material. No. 521,998. Imperial Chemical Industries Limited.

Reduction of ores. No. 522,098. F. Hodson and P. A. Hirsch.

Polymerization of olefine hydrocarbons. No. 521,891. R. F. Ruthruff.

Process for the manufacture of fertilizers. No. 521,894. J. A. Coombs.

Leveling of charges in coke-ovens and the like. No. 521,909. Woodall-Duckham (1920), Ltd.

Manufacture of detergents. No. 521,910. Crosfield & Sons, Ltd.

Production of copper-base alloys. Nos. 521,927 and 522,008. Mallory Metallurgical Products, Ltd.

Process for the manufacture of alloy steels by metallothermic reaction. No. 521,951. M. L. A. Strittmatter.

Production of anhydrous metallic chlorides. No. 521,975. H. A. Richardson.

Surface treatment of glass and other mineral fibres. No. 521,982. N. V. Mij. tot Beheer en Exploitatie van Octrooien.

Resinous compositions. No. 522,012. British Thomson-Houston Co., Ltd.

Production of stable, concentrated, aqueous solutions of theophylline and caffeine, suitable for injections. No. 521,989. Knoll A. G. Chemische Fabriken.

Manufacture of high-molecular ketenes. No. 522,033. Deutsche Hydrierwerke A. G.

Aluminum alloy. No. 522,050. H. C. Hall.

Destructive hydrogenation of carbonaceous materials and dephenolizing waste water. No. 522,037. N. V. Internationale Hydrogeneerings-octrooien Mij.

Lubricants and their manufacture. Nos. 522,122 and 522,123. E. I. du Pont de Nemours & Co., Inc.

Manufacture of quinhydrone-like derivatives of vat dyestuffs. No. 522,127. Society of Chemical Industry in Basle.

Method for the production of urane compounds. No. 522,066. Parke, Davis & Co.

Cellulose ether coating compositions. No. 522,077. Pittsburgh Plate Glass Co.

Production of cellulose xanthate. No. 522,083. Comptoir des Textiles Artificiels.

Plant and mechanism for the manufacture of fertilizers. No. 521,939. L. A. Coombs.

FRENCH PATENTS

Granted December 7, 1939; Published December 14, 1939.

Opacified vitrified glaze and method of preparation. No. 853,482. Sociéte de Produits Chimiques des Terres Rares.

Manufacture of tannin from sulfite waste. No. 853,436. H. Honig and W. Feith.

Amides and process of manufacture. No. 853,460. I. G. Farbenindustrie A. G.

Chloroprene polymerized in presence of sulfur. No. 853,478. E. I. du Pont de Nemours & Co., Inc.

Manufacture of powdered alkaline silicates. No. 853,480. La Floridienne J. Buttgenbach & Co.

Preparation of easily soluble calcium salts which produce stable solutions. No. 853,508. Firme Juhann A. Wulfing.

Process of manufacturing trioxysulfuric acids. No. 853,606. I. G. Farbenindustrie A.G.

Manufacture of beta-alkyl aldehydes. No. 853,607. Deutsche Gold und Silber Scheideanstalt vormals Roessler.

Manufacture of beta-alkyl carboxylic acid. No. 853,608. Deutsche Gold und Silber Scheideanstalt vormals Roessler.

Manufacture of unsaturated acids and their esters. No. 853,609. Deutsche Gold und Silber Scheideanstalt vormals Roessler.

Manufacture of zein. No. 853,632. Corn Products Refg. Co.

Manufacture of olefine oxides. No. 863,644. I. G. Farbenindustrie A.G.

Manufacture of butadiene. Nos. 853,645 and 853,646. I. G. Farbenindustrie A.G.

Manufacture of carboxylic esters of monochlorihydrin. No. 853,647. I. G. Farbenindustrie A.G.

Manufacture of phosphodichlorides of 4-amino-benzene-sulfonamide. No. 853,666. F. Hoffman-LaRoche & Co.

Manufacture of new amidines. No. 853,705. Société pour l'Industrie Chimique a Bale.

Manufacture of amidines of amino acids. No. 853,735. Imperial Chemical Industries Limited.

Manufacture of polyvalent alcohols. No. 853,752. Imperial Chemical Industries Ltd.

Soluble salts of acid dyes of the anthraquinone series and process of improving their solubility. No. 853,428. Sandoz, S.A.

Manufacture of coloring matter. No. 853,462. Manchester Oxide Co., Ltd.

Improvement in process of applying cellulose lacquers. No. 853,548. Commercial Solvents Corporation.

Triazo dyes and process of manufacture. No. 853,627. I. G. Farbenindustrie A. G.

Manufacture of benzaldehyde substituted triarylmethane dyes. No. 853,676. I. G. Farbenindustrie A. G.

Manufacture of anthraquinone dyes. No. 853,741 and 853,756. I. G. Farbenindustrie A. G.

Halogenated carboxylic benzophenone acid dyes and method of preparation. No. 853,744. I. G. Farbenindustrie A. G.

Removal of acid components from hydrocarbon distillates. No. 853,562. N. V. de Bataafsche Petroleum Mij.

Method of improving yield of hydrocarbons in high temperature coking. No. 853,584. Gelsekirchener Bergwerks A. G.

Manufacture of halogenated hydrocarbons. No. 853,643. I. G. Farbenindustrie A. G.

Treatment of mineral oils with solvents. No. 853,718. Standard Oil Development Co.

Cracking of petroleum hydrocarbons in presence of water-soluble catalysts. No. 853,719. Standard Oil Development Company.

Plastification of synthetic rubber. No. 853,479. E. I. du Pont de Nemours & Co., Inc.

Regeneration of vulcanized rubber. No. 853,577. I. G. Farbenindustrie A. G.

Applying polyvinyl chloride plastic to wood or other matter of similar surface. No. 853,483. Deutsche Celluloid Fabrik A. G.

Concentration of phosphates. No. 853,477. Ritter Products Corp.

Anti-corrosive cooling liquid. No. 853,568. K. E. W. Oesterreich.

Process of polymerizing olefines. No. 853,642. I. G. Farbenindustrie A. G.

Manufacture of tanning substances. No. 853,673. I. G. Farbenindustrie A. G.

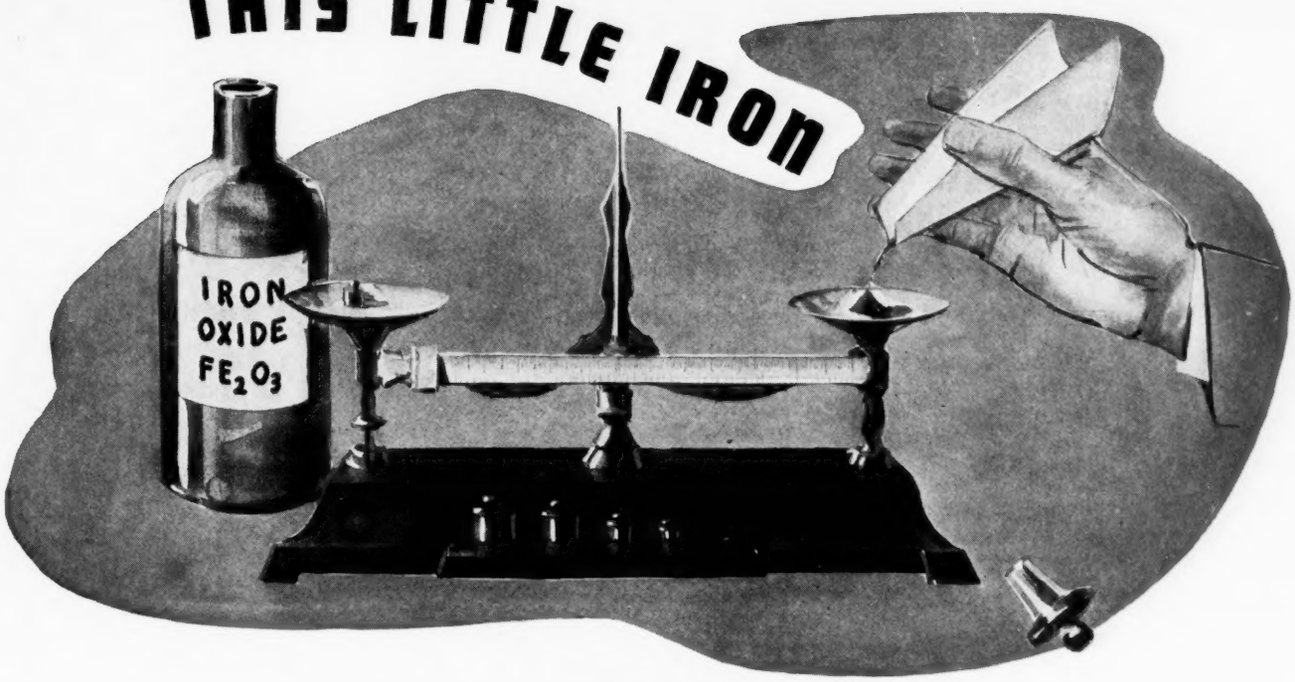
Production of capillary active substances. No 853,686. I. G. Farbenindustrie A. G.

Polymerization of unsaturated hydrocarbons. No. 853,733. N. V. de Bataafsche Petroleum Mij.

Regeneration of nickel catalysts. No. 853,753. Imperial Chemical Industries, Ltd.

Manufacture of products containing solid polymers of ethylene. No. 853,754. Imperial Chemical Industries, Ltd.

THIS LITTLE IRON



From a Whole Ton of

WARNER CAUSTIC SODA

A druggist's stock of tonic contains about as much iron as a ton of Warner Caustic Soda. This regular production-grade electrolytic caustic soda has its iron content held as low, or lower, than any caustic soda made by any method.

Its salt content also is reduced to a percentage that has no deleterious effect. Despite its clarity and high quality you pay a regular production-grade price . . . get superior results at substantial savings.

Furnished in 50% and 70% concentrations—73% concentration shipped in specially lined tank cars—also in flake and solid. We will welcome your inquiry for consultation, samples and quotations.

OTHER WARNER CHEMICALS

Tetra Sodium Pyrophosphate
Acid Sodium Pyrophosphate
Phosphoric Acid
Sodium Phosphates
Liquid Caustic Potash
Chlorine, Liquid
Sulfur Chloride
Trichlorethylene
Barium Carbonate
Perchlorethylene
Carbon Bisulfide
Sodium Sulfide
Bromine
Blanc Fixe
Carbon Tetrachloride
Epsom Salt
Hydrogen Peroxide
Alumina Hydrate, Light
Chemical Grade Magnesia

CHEMICAL **WARNER** COMPANY

DIVISION OF
WESTVACO CHLORINE PRODUCTS CORPORATION

CHRYSLER BUILDING, NEW YORK, N. Y.